CHAPTER 2

Using the NetFlow Collector User Interface

Cisco NetFlow Collector (NFC), Release 6.0 has a web-based user interface (UI) for configuration, control, and reporting. Each collector instance has a web server that the user can start to enable the web-based UI.

This chapter includes the following sections:

Starting the Cisco NetFlow Collector User Interface

To start the Cisco NetFlow Collector User Interface, do the following.

Note The Cisco NetFlow Collector User Interface requires JRE 1.5 or higher. You can download a plug-in for Java 1.5 or higher from java.sun.com, section **Downloads**, **J2SE** folder; and install it on the platform on which the browser will run.

Step 1 To run Cisco NetFlow Collector, log in as the user specified during installation.

Step 2 Enter the following command:

/opt/CSCOnfc/bin/nfcollector start all

Step 3 From a web browser enter:

//<*nfc-hostname*>:8080/nfc

Note The web-based UI only works with the collector located on the same machine. To access a different instance of Cisco NetFlow Collector you must start that collector's web server and access it through the corresponding URL.

Customizing the Cisco NetFlow Collector Interface

The NFC application includes the tool **/opt/CSCOnfc/bin/webconfig.sh** for configuring HTTP or HTTPS and the port number for accessing the web UI.

For example, to enable HTTPS access, do the following:

Step 1 To run the tool, enter the following:

/opt/CSCOnfc/bin/webconfig.sh

Step 2 You are prompted to configure HTTP or HTTPS access to the NFC web server.

```
Configure http or https access to the NFC web server:

[1] Access the NFC web server with http (unencrypted)

[2] Access the NFC web server with https (encrypted)

Select one:
```

Step 3 To select HTTPS, enter **2**.

Step 4 Enter the port number for web access.

```
Enter port number for web access [8443]
```

Step 5 Enter the keystore and certificate password. It must be at least 6 characters.

Step 6 Select a certificate type.

```
Certificate type:

[1] Create a self-signed certificate

[2] Import an existing certificate

Select one:
```

If you select 1, the window displays:

```
Creating keystore with self-signed certificate

Enter certificate validity period in days: [3650]

The subject name in the certificate is based on the hostname of this device
by default. If the URL used to access NFC on this host contains a different
name e.g. IP address, the browser will report a site name mismatch.
```

Step 7 Enter the subject hostname or IP address.

Step 8 When the web configuration is complete, the following is displayed:

```
NFC web configuration has been updated.
```

Table 2-1 describes additional settings that can be customized for the Cisco NetFlow Collector web-based UI.

Table 2-1 Cisco NetFlow Collector User Interface Settings

Setting	Description	Default Value	File
intfc- password	Digest password for the CNS/XML interface. Stored as a parameter to the InitServlet in the servlet configuration file. This setting must match the md5-password value of the CNS/XML interface.	password	NFC_DIR/tomcat/webapps/nfc/WEB- INF/web.xml
session-timeout	A session is started after a user logs in to the web-based UI. This timeout indicates the duration of inactivity allowed before a session expires and the user is automatically logged out. Add:**`<session-config><session-timeout>30</session-timeout></session-config>`** after all **`<servlet-mappings>`**.	30 minutes	NFC_DIR/tomcat/webapps/nfc/WEB-INF/web.xml

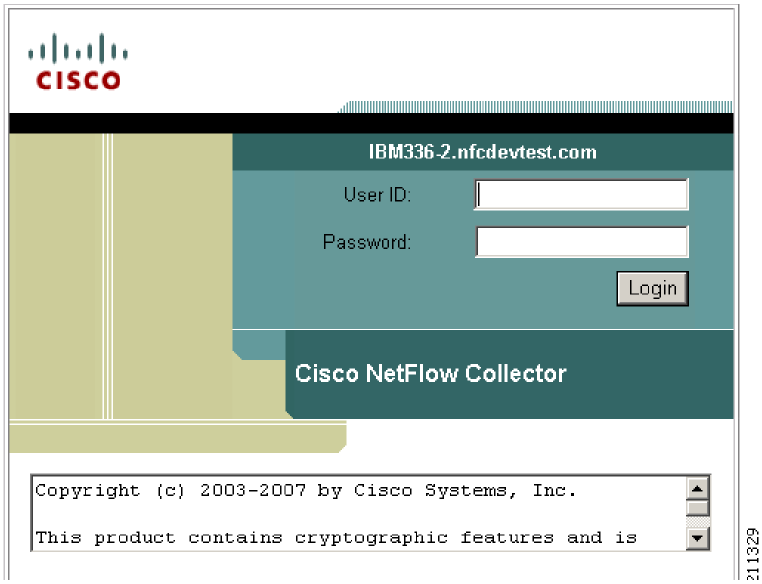
Using the Cisco NetFlow Collector User Interface

The following sections describe using the Cisco NetFlow Collector User Interface.

The NFC Login Window

When starting the Cisco NetFlow Collector, the first window that appears is the NFC login window, as shown in Figure 2-1. For security purposes, to use the web-based UI you must authenticate yourself with a user ID and password. These values are configured as described in Table 2-1.

Figure 2-1 Cisco NetFlow Collector User Interface Login Window



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This product contains cryptographic features and is

To log in to Cisco NetFlow Collector, do the following:

Step 1 From the Login window, enter your User ID and Password.

Step 2 Click **Login**.

The Cisco NetFlow Collector Main window appears. From this window, you can select from the following tabs:

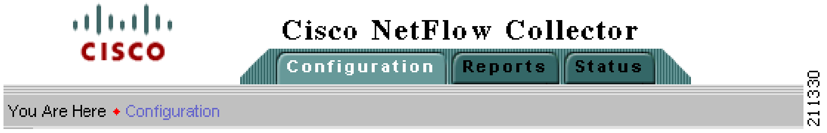
- Configuration
- Reports
- Status

See the following sections for information on these functions.

Navigation

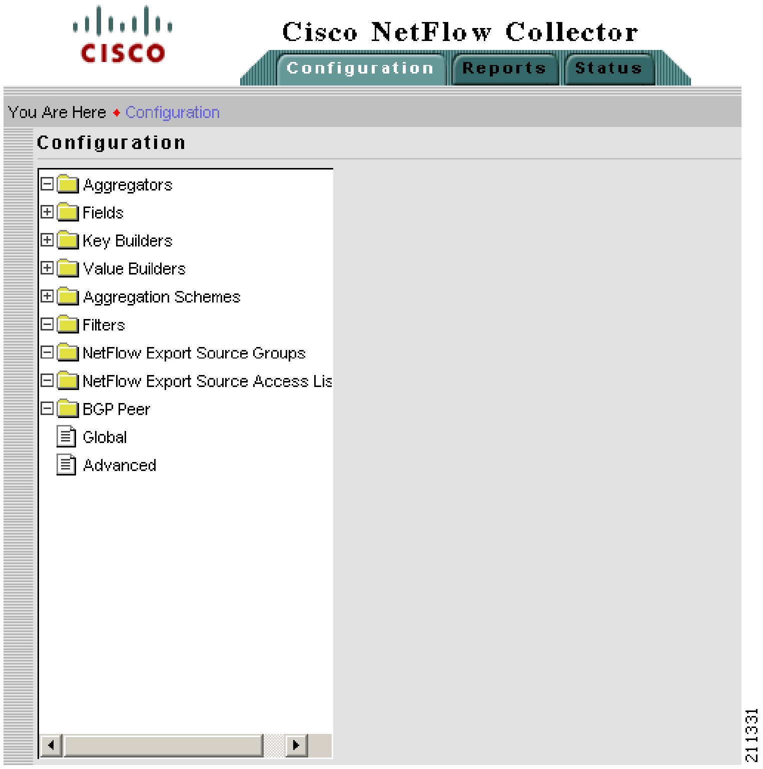
You can move around the NFC web-based user interface (UI) from two levels. Across the top of all NFC windows are the NFC UI navigation tabs. These tabs are the first level of navigation in to the NFC UI, as shown in Figure 2-2. From here you can select the **Configuration**, **Reports**, and **Status** tabs. The toolbar at the far right includes links to **Logout**, **Help**, and **About** windows.

Figure 2-2 NFC UI Navigation Tabs



Each section of NFC User Interface has a navigation tree on the left-hand side, as shown in Figure 2-3. This second level of navigation lets you focus in on a specific aspect of collector configuration, reporting, or status.

Figure 2-3 NFC UI Navigation Tree

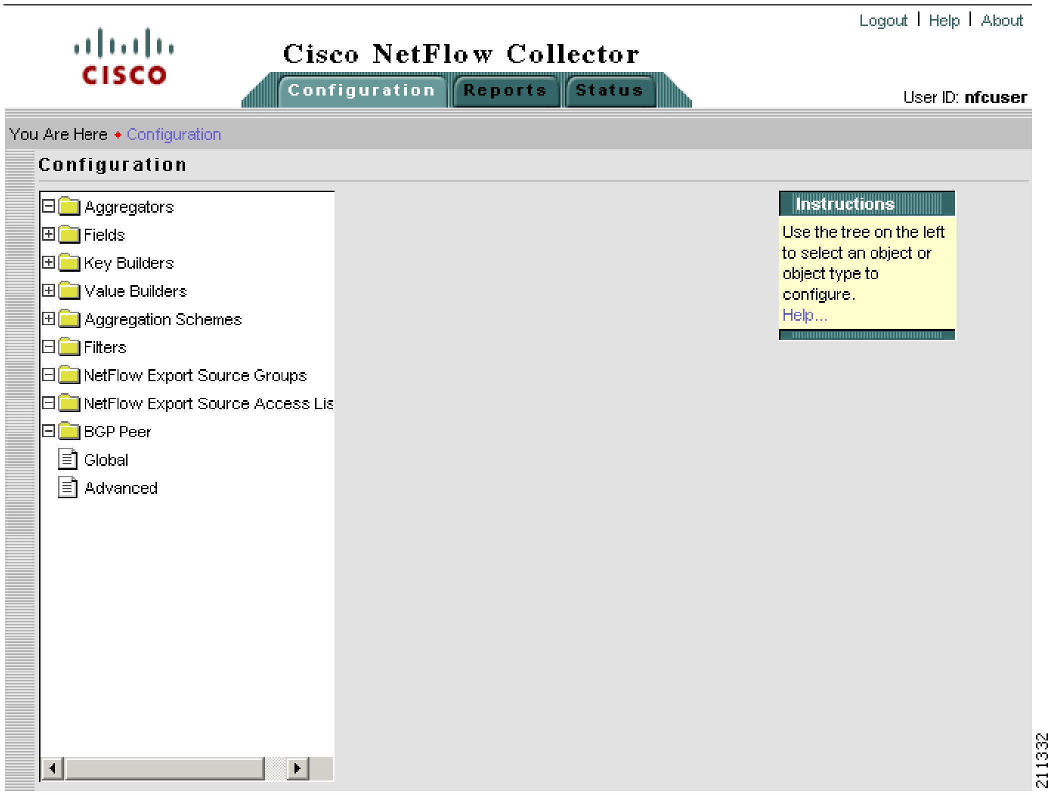


Configuration

From the Configuration window you can perform tasks including specify global parameters; define fields, key builders, value builders and aggregators; and create filters.

From the Cisco NetFlow Collector **Main** window, click the **Configuration** tab. The Configuration window appears, as shown in Figure 2-4.

Figure 2-4 NFC Configuration Window



Use the tree on the left to select an object or object type to configure.
Help...

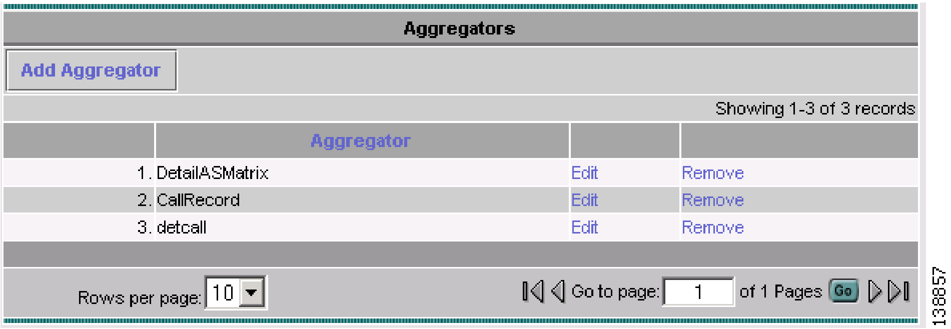
From this window you can access or configure the following:

- Aggregators, page 2-7
- Fields, page 2-10
- Key Builders, page 2-11
- Value Builders, page 2-21
- Aggregation Schemes, page 2-25
- Filters, page 2-26
- NetFlow Export Source Groups, page 2-27
- NetFlow Export Source Access List, page 2-28
- BGP Peer, page 2-29
- Global, page 2-30
- Advanced, page 2-30

Aggregators

Aggregators define how the Cisco NetFlow Collector receives NetFlow data, aggregates or combines the data, and generates output files. Click on the **Aggregators** folder of the NFC UI navigation tree to display a table of all existing aggregators, as shown in Figure 2-5.

Figure 2-5 Aggregators Window



Aggregators

Add Aggregator

Showing 1-3 of 3 records

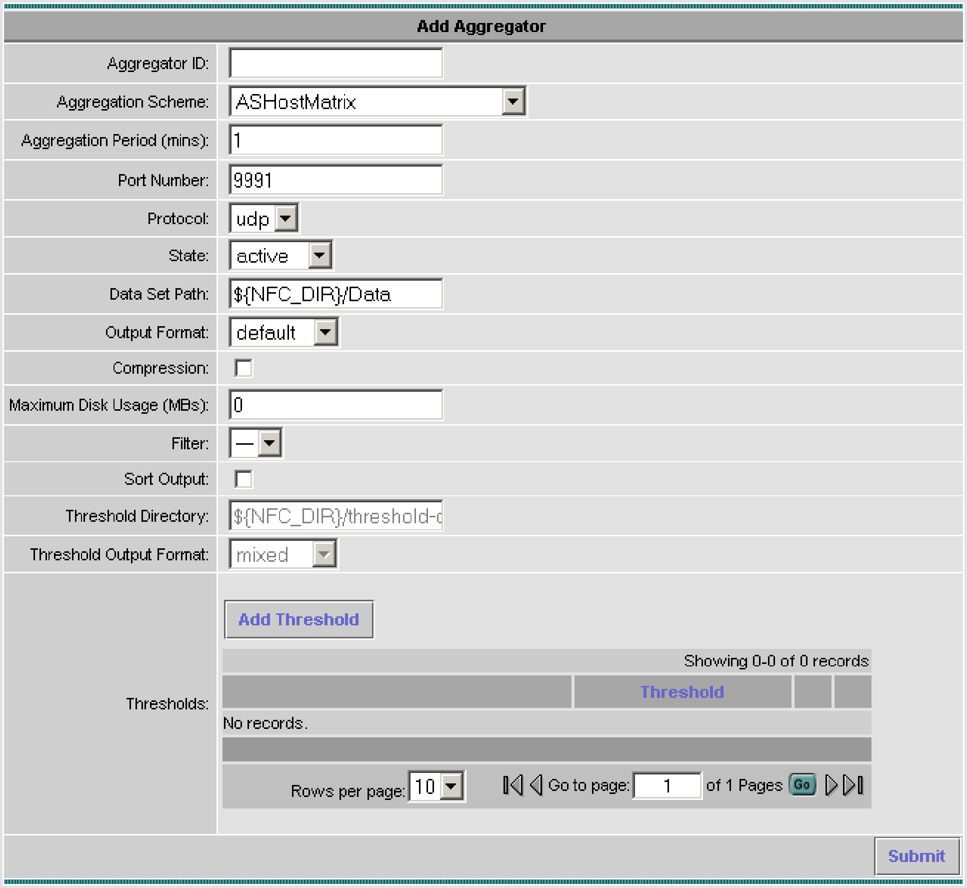
	Aggregator		
1.	DetailASMatrix	Edit	Remove
2.	CallRecord	Edit	Remove
3.	detcall	Edit	Remove

Rows per page: 10 Go to page: 1 of 1 Pages Go

Adding Aggregators

From the Aggregators window, click on **Add Aggregator** to bring up the Add Aggregator window to define a new aggregator. See Figure 2-6.

Figure 2-6 Add Aggregator Window



Add Aggregator

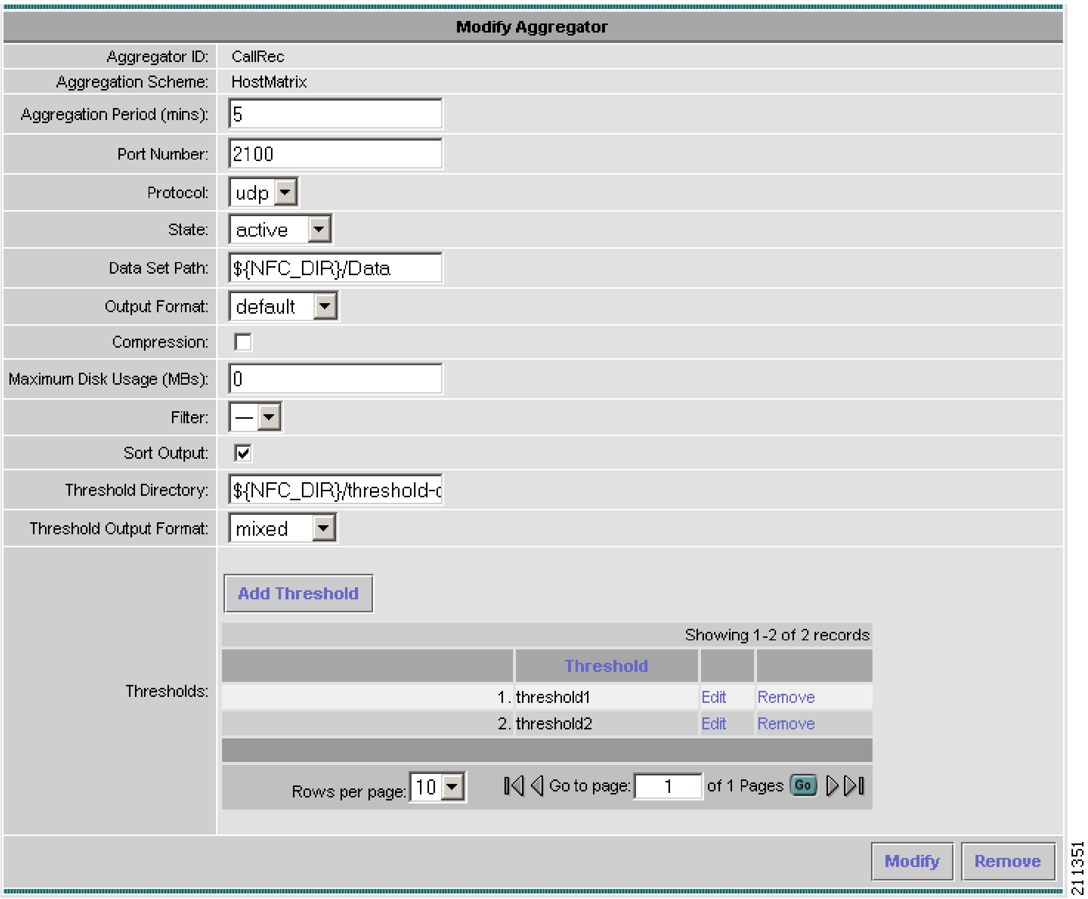
Aggregator ID:	
Aggregation Scheme:	ASHostMatrix
Aggregation Period (mins):	1
Port Number:	9991
Protocol:	udp
State:	active
Data Set Path:	${NFC_DIR}/Data
Output Format:	default
Compression:	□
Maximum Disk Usage (MBs):	0
Filter:	—
Sort Output:	□
Threshold Directory:	${NFC_DIR}/threshold-c
Threshold Output Format:	mixed
Thresholds:	Showing 0-0 of 0 records Threshold No records. Rows per page: 10 Go to page: 1 of 1 Pages

Fill in the fields and click **Submit** to complete the operation.

Editing an Aggregator

To modify or remove an existing aggregator, click **Edit** for the aggregator which you wish to modify or remove from the list of aggregators displayed in the Aggregator window (Figure 2-6). The **Modify Aggregator** window displays, as shown in Figure 2-7.

Figure 2-7 Modify Aggregator Window



Modify Aggregator

Aggregator ID:	CallRec
Aggregation Scheme:	HostMatrix
Aggregation Period (mins):	5
Port Number:	2100
Protocol:	udp
State:	active
Data Set Path:	${NFC_DIR}/Data
Output Format:	default
Compression:	□
Maximum Disk Usage (MBs):	0
Filter:	—
Sort Output:	☑
Threshold Directory:	${NFC_DIR}/threshold-c
Threshold Output Format:	mixed
Thresholds:	

Showing 1-2 of 2 records

	Threshold		
1.	threshold1	Edit	Remove
2.	threshold2	Edit	Remove

Rows per page: 10 Go to page: 1 of 1 Pages

To modify the selected aggregator, fill in the fields and click **Modify** to complete the operation. To remove the selected aggregator, click **Remove**.

Note When a key or value builder, filter, or aggregation scheme is modified through the web-based user interface, collector configuration is updated immediately. However, for the update to have an affect on aggregation and output, the aggregator must be modified or the collector must be restarted.

Thresholds

Thresholds provide a way to generate events when values in the NetFlow Collector output cross a specified target value. You configure thresholds for each aggregator. A list of thresholds for an aggregator is displayed in the Add Aggregator window.

From the Add Aggregator window, click **Add Threshold** to add a new threshold. Click on the appropriate link in the threshold list to modify or remove an existing Threshold.

When adding and editing thresholds the windows are identical with the exception that you cannot change the threshold ID when modifying a threshold. Use this window to add, remove, and order threshold conditions.

The threshold editor is applet-based. A tree on the left-hand side of the threshold editor shows the elements of the threshold. A form on the right-hand side of the threshold editor contains the attributes for the currently selected item in the tree.

The top item in the tree is the name of the threshold. Directly beneath this is a top-level threshold condition or expression. Add the top-level threshold condition or expression by selecting **Add condition** or **Add expression** when the top item is selected. If the top-level threshold condition or expression evaluates to true when the threshold is evaluated, a threshold-crossing log is created. See the "Creating a Threshold" section on page 4-26 for more information about thresholds.

A threshold expression contains two or more expressions or conditions. Arbitrarily complex threshold evaluation logic can be specified in this way.

When creating a threshold condition, specify:

- Whether the comparison is greater than, less than, equals, or not-equals
- Which key or value is compared

Directly beneath the threshold condition is one or more value or range items. These determine the set of target values to which the comparison is applied. Add a value or range to the threshold condition by selecting Value or Range. For an integer condition, only integer values and ranges can be entered; only IP address values can be entered for address conditions.

Boolean logic is applied to two or more conditions using an expression. An expression can also appear within an expression in place of a condition.

To create an expression, specify the logical operator and, or, not-and, or not-or and select **Add expression**. An expression must contain at least two other conditions or expressions.

The conditions and expressions within an expression are evaluated in top-down order. Evaluation performance for an expression can be optimized by placing conditions and expressions which are more likely to occur closer to the top. Select an item then select Move to move the item up until it reaches the top; selecting Move again cycles the item to the bottom.

Any item in the tree including the items beneath it can be removed by selecting Remove. Pressing the back button on the browser also causes any changes to be discarded.

Note Remove items with care because no cut, paste, or undo capability is provided. Changes are not committed until you select **Update Threshold** or **Remove Threshold**.

The symbol **!** at the beginning of any item in the tree indicates that the configuration specified at that level of the tree is incomplete and must be updated before the threshold can be added or updated.

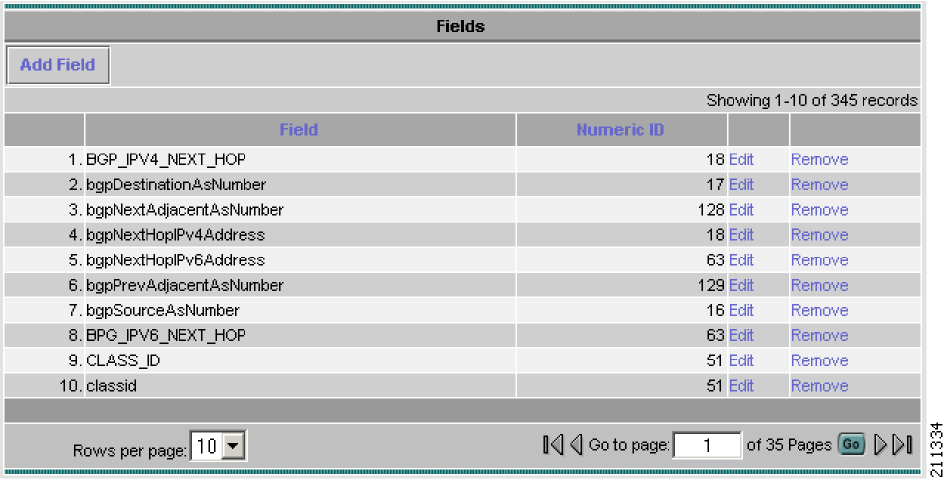
Fields

Fields represent individual items of data exported by a device in a NetFlow flow, and are the building blocks upon which the keys and values referenced by aggregation schemes are based.

Clicking on the **Fields** folder of the NFC UI navigation tree displays a table of currently defined fields as shown in Figure 2-8. Click **Edit** to modify a specific field, or **Remove** to remove a selected field. Click **Add Field** to bring up an empty form for defining a new field.

Aliases, alternate names for fields, are also shown in the navigation tree and table and can be added when a field is defined or modified

Figure 2-8 Fields Window

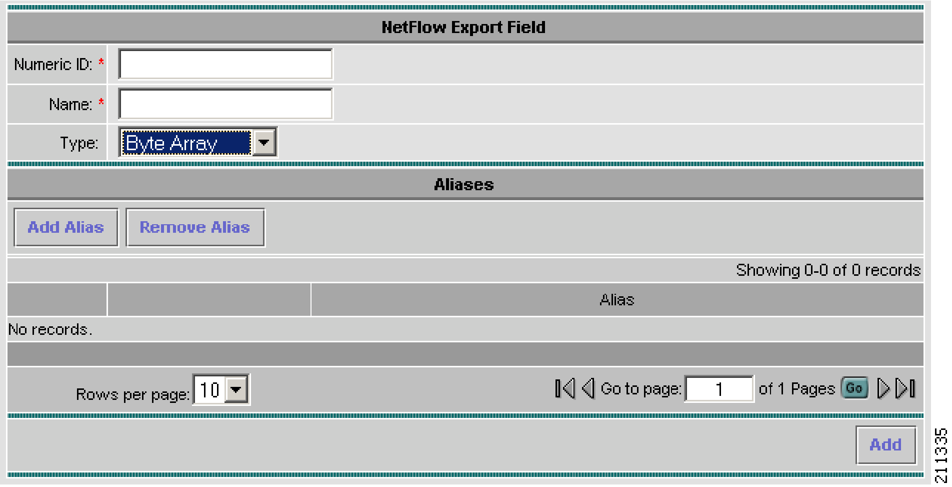


Showing 1-10 of 345 records

	Field	Numeric ID		
1.	BGP_IPV4_NEXT_HOP	18	Edit	Remove
2.	bgpDestinationAsNumber	17	Edit	Remove
3.	bgpNextAdjacentAsNumber	128	Edit	Remove
4.	bgpNextHopIPv4Address	18	Edit	Remove
5.	bgpNextHopIPv6Address	63	Edit	Remove
6.	bgpPrevAdjacentAsNumber	129	Edit	Remove
7.	bgpSourceAsNumber	16	Edit	Remove
8.	BPG_IPV6_NEXT_HOP	63	Edit	Remove
9.	CLASS_ID	51	Edit	Remove
10.	classid	51	Edit	Remove

The NetFlow Export Field window, Figure 2-9, is displayed when adding or modifying a field. Fill in the form and click **Add** or **Modify** to complete the operation. From the Modify window you can also remove the currently displayed field. Click **Add Alias** or **Remove Alias** to add or remove an alias (alternate name) for this field. See the "Fields" section on page 4-4 for additional information about field definitions.

Figure 2-9 NetFlow Export Field Window



Numeric ID: *
Name: *
Type: Byte Array

Showing 0-0 of 0 records

		Alias

No records.

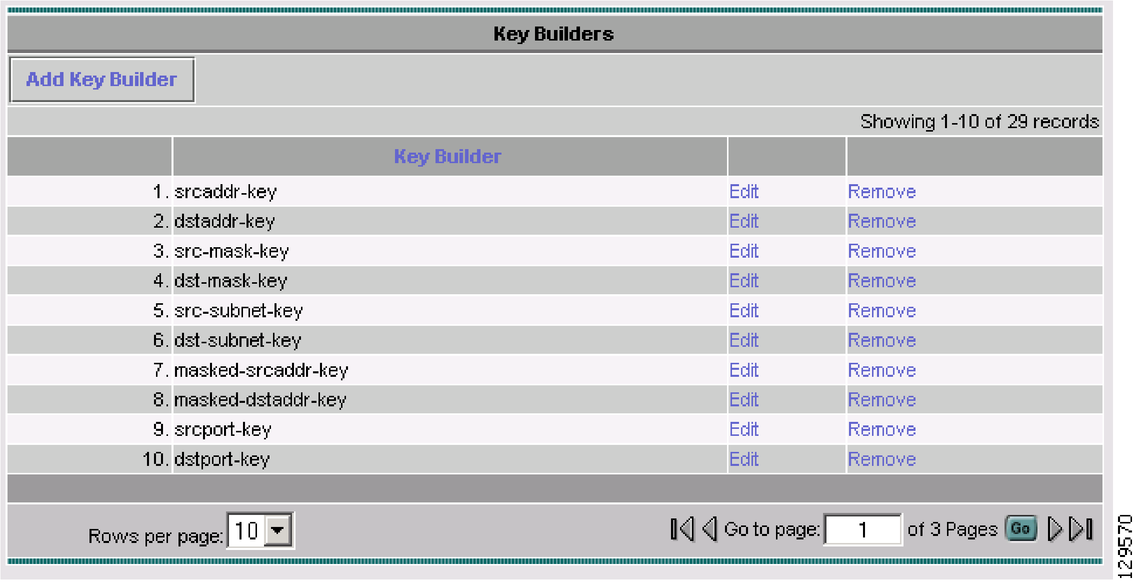
Key Builders

An aggregation scheme consists of *keys* and *values*. Within an aggregation period, each value within flows having the same set of keys is aggregated (typically summed) together with the corresponding values from earlier matching flows within an aggregation period.

Fields are not referenced directly by an aggregation scheme; instead, a *key builder* or *value builder* references a field, and one or more aggregation schemes references the builder.

Clicking on the **Key Builders** folder of the NFC UI navigation tree displays a table of currently defined key builders as shown in Figure 2-10. Click **Edit** to modify a specific key builder, or **Remove** to remove a selected key builder. Click **Add Key Builder** to bring up an empty form for defining a new key builder.

Figure 2-10 Key Builders Window



Showing 1-10 of 29 records

	Key Builder		
1.	srcaddr-key	Edit	Remove
2.	dstaddr-key	Edit	Remove
3.	src-mask-key	Edit	Remove
4.	dst-mask-key	Edit	Remove
5.	src-subnet-key	Edit	Remove
6.	dst-subnet-key	Edit	Remove
7.	masked-srcaddr-key	Edit	Remove
8.	masked-dstaddr-key	Edit	Remove
9.	srcport-key	Edit	Remove
10.	dstport-key	Edit	Remove

All key builders have a unique ID and a type. The ID is displayed in the navigation tree and the key builder table. The attributes shown in the form depend on the type that is selected; different key builder types have different attributes. The following sections describe the attributes for each type of key builder:

- BGP Attribute, page 2-13
- Bit Field, page 2-14
- Boolean, page 2-14
- Byte Array, page 2-14
- Customer Name, page 2-15
- Egress PE, page 2-15
- Ingress CE, page 2-16
- Integer, page 2-16
- Integer Range Map, page 2-17
- Interface SNMP Name, page 2-17
- IP Address, page 2-17
- IP Address Range Map, page 2-18
- Mac Address, page 2-18
- Masked IP Address, page 2-18
- Multi-Field Map, page 2-19
- Option Data, page 2-20
- Site Name, page 2-20
- String, page 2-21
- Subnet Address, page 2-21

BGP Attribute

A **BGP Attribute** key builder looks up a BGP attribute from the Cisco NetFlow Collector BGP peer using an address from a flow. The complete AS path is a special case that uses both a source and a destination address from a flow. The BGP Attribute key builder has the following attributes.

Attribute	Description
Output name	Column name in output; defaults to the field ID if not specified.
Attribute type	One of the following radio buttons: • Complete AS Path • Well Known Name—Select from ORIGIN, AS_PATH, NEXT_HOP, MULTI_EXIT_DESC, LOCAL_PREF, ATOMIC_AGGREGATOR, AGGREGATOR, COMMUNITY, ORIGINATOR_ID, or CLUSTER_LIST • Integer Type ID.
Source address key	ID of a key builder that returns the source address for a complete AS path look up, otherwise disabled.
Destination address key	ID of a key builder that returns the destination address for querying the attribute.
Post-aggregation	Determines whether look ups are performed for each flow or at the end of the aggregation period; this should always be selected, otherwise attributes are queried from the Cisco NetFlow Collector BGP peer as flows arrive resulting in a significant performance impact.

Bit Field

The **Bit Field** key builder obtains a subset of bits from a field in a flow. It has the following attributes.

Attribute	Description
Output name	Column name in output; defaults to the field ID if not specified.
Field	ID of the field in a flow from which to extract bits.
Least significant bit	Least significant bit of interest (starts at 0).
Number of bits	Number of bits of interest.
Format	*Decimal* or *hexadecimal*.
Allow null value	If *not* selected, an error is logged if a flow does not contain the indicated field.

Boolean

A **Boolean** key builder maps flow values to **true**, **false**, or **undefined**. The Boolean key builder has the following attributes.

Attribute	Description
Output name	Column name in output; defaults to the field ID if not specified.
Field	ID of the field in a flow containing the value of interest.
Allow null value	If *not* selected, an error is logged if a flow does not contain the indicated field.

Byte Array

A **Byte Array** key builder outputs bytes from flow data in hexadecimal format. The Byte Array key builder has the following attributes.

Attribute	Description
Output name	Column name in output.
Field	ID of the field to obtain from a flow.
Offset	Starting byte offset from the beginning of the field in the flow. Set to zero if not specified.
Length	Number of bytes of interest, from the offset to the end of field data if not specified.
Allow null value	If *not* selected, an error is logged if a flow does not contain the indicated field.

Customer Name

The **Customer Name** key builder resolves the customer name from the input interface field. It has the following attributes:

Attribute	Description
Output name	Column name in output.
Field	ID of the field to obtain from a flow.
Allow null value	If *not* selected, an error is logged if a flow does not contain the indicated field.

The Customer Name key builder requires configuration in the **config/vpn.conf** file. You must include one row to correspond to each PE device VPN interface that export NetFlow packets to this NFC server. The rows in this file contains five fields, in the following order: exporting device (PE) IP address, interface name, name of the site to which this interface is connected, CE to which this interface is connected, and customer name. These fields should be separated by commas. See the following example:

```
172.20.98.250,FastEthernet0/1.401,vpn1-branchB,CERouter-3,Cisco
172.20.98.250,FastEthernet0/1.601,vpn2-branchB,CERouter-4,IBM
172.20.98.248,FastEthernet2/1,vpn2-branchA,CERouter-2,IBM
172.20.98.246,FastEthernet0/1,vpn1-branchA,CERouter-1,Cisco
```

The exporting device (PE) IP address and interface name fields are required. You can include empty strings for the remaining fields in each row if those fields do not need to be resolved. For example, if you do not need to specify a site name, the site name fields can be left empty.

Note Each row must contain four commas. Empty fields must be separated with commas.

Egress PE

The **Egress PE** key builder resolves the egress PE from the BGP nexthop field. It has the following attributes:

Attribute	Description
Output name	Column name in output.
Field	ID of the field to obtain from a flow.
Allow null value	If *not* selected, an error is logged if a flow does not contain the indicated field.

This key builder requires configuration in the **config/peList.conf** file. This file should include the loopback addresses or hostnames of all PEs in the network. See the following sample:

```
# This file is for the PE-PE traffic summary only # It should contain a list of IDs
for all PE devices in the provider network # ID of PE device can be either host name
or IP address
192.168.200.2
192.168.200.3
192.168.200.4
```

Ingress CE

The **Ingress CE** key builder resolves the ingress CE from the input interface field. It has the following attributes:

Attribute	Description
Output name	Column name in output.
Field	ID of the field to obtain from a flow.
Allow null value	If *not* selected, an error is logged if a flow does not contain the indicated field.

This key builder requires configuration in the **config/peList.conf** file. You must include one row to correspond to each PE device VPN interface that export NetFlow packets to this NFC server. The rows in this file contains five fields, in the following order: exporting device (PE) IP address, interface name, name of the site to which this interface is connected, CE to which this interface is connected, and customer name. These fields should be separated by commas. See the following example:

```
172.20.98.250,FastEthernet0/1.401,vpn1-branchB,CERouter-3,Cisco
172.20.98.250,FastEthernet0/1.601,vpn2-branchB,CERouter-4,IBM
172.20.98.248,FastEthernet2/1,vpn2-branchA,CERouter-2,IBM
172.20.98.246,FastEthernet0/1,vpn1-branchA,CERouter-1,Cisco
```

Integer

An **Integer** key builder obtains an integer value from a flow. It has the following attributes.

Attribute	Description
Output name	Column name in output; defaults to the field ID if not specified.
Field	ID of the field in a flow.
Format	*Decimal* or *hexadecimal*.
Allow null value	If *not* selected, an error is logged if a flow does not contain the indicated field.

Integer Range Map

An **Integer Range Map** key builder obtains an integer from a flow and maps the value to a string. It has the following attributes.

Attribute	Description
Output name	Column name in output; defaults to the field ID if not specified.
Field	ID of the field in a flow.
Allow null value	If *not* selected, an error is logged if a flow does not contain the indicated field.
Default label	Mapping result if no match is found.

Mapping information appears in the Integer Ranges list. Each list item contains an integer value or range and the label it maps to. Labels can appear more than once, but duplicate or overlapping values and ranges are not allowed. Click on **Add Range** to add a new value or range.

Interface SNMP Name

The **Interface SNMP Name** key builder maps an interface index to an interface name obtained via SNMP. It has the following attributes.

Attribute	Description
Output name	Column name in output.
Field	ID of the field to obtain from a flow containing the interface index.
Allow null value	If *not* selected, an error is logged if a flow does not contain the indicated field.

IP Address

An **IP Address** key builder obtains an IP address from a flow. It has the following attributes.

Attribute	Description
Output name	Column name in output; defaults to the field ID if not specified.
Field	ID of the field in a flow.
Format	*Standard notation, hostname* (via a DNS look up), or *integer*. Note: The integer format is obsolete and should not be used. It is retained for backwards compatibility.
Allow null value	If *not* selected, an error is logged if a flow does not contain the indicated field.

IP Address Range Map

An **IP Address Range Map** key builder obtains an IP address from a flow and maps the value to a string. It has the following attributes.

Attribute	Description
Output name	Column name in output; defaults to the field ID if not specified.
Field	ID of the field to look up from flows.
Allow null value	If set to *false* (default) and a flow does not contain field, an error is logged. I f set to *true*, the output value is empty and no error is logged.
Default label	Output value if no mapping result is found; otherwise if not specified the value itself is output.

Mapping information appears in the IP Address Ranges list. Each list item contains an IP address value or range and the label it maps to. Labels can appear more than once, but duplicate or overlapping values and ranges are not allowed. Click **Add range** to add a new value or range.

Mac Address

The Mac Address key builder reads and outputs an MAC address. It has the following attributes.

Attribute	Description
Output name	Column name in output; defaults to the field ID if not specified.
Field	ID of the field to look up from flows.
Allow null value	If set to *false* (default) and a flow does not contain field, an error is logged. If set to *true*, the output value is empty and no error is logged.

Masked IP Address

The **Masked IP Address** key builder is obsolete and should not be used. It will be removed in a subsequent release.

Multi-Field Map

The **Multi-Field Map** editor is applet-based and is different than the forms for other key builder types because of the hierarchical nature of a multi-field map. A tree on the left-hand side of the Multi-Field Map editor shows the elements of the map. A form on the right-hand side of the Multi-Field Map editor shows the attributes for the selected item in the tree.

The top level of the tree contains the following attributes.

Attribute	Description
ID	ID that uniquely identifies this map.
Output name	Column name displayed in output for this key builder.
Default label	Default value shown in output if no match for the specified conditions is found.

Beneath the top level of the tree are one or more conditions. After selecting the top tree item, create a condition as follows:

1. Select the condition type (integer, IP address, or string).
2. Choose the key builder that will produce values for the condition.
3. Click **Add condition**.

A new condition will be added following all other conditions at that level and will be selected in the tree. The form displayed on the right side will display the new condition. In this form, select **Add case** one or more times to add cases for each value or range of interest. A new tree item for the case is added following all other cases under this condition's tree item; the new tree item is selected; and a form for the case is displayed on the right hand side.

A single case has one or more values and ranges and the label associated with a match for these values and ranges. The values and ranges for one case must be unique for all cases for this condition. To add a value or range to the case, select **Add value** or **Add range**. A new value or range is added to the case; a tree item for the value or range is added beneath the case's tree item; and a form is displayed on the right hand side for the new value or range.

Each case can also have one or more conditions nested beneath it that reference a different key builder. Therefore for a particular value, range, or set of values for one key, the value of a different key can further refine the result of the multi-field map. Conditions are added to a case as described above for adding conditions to the top level of the tree.

Selecting **Move** for a case or condition moves the tree item for the case or condition up. After the item is at the top, it cycles back to the bottom. The order of cases has no impact on performance when evaluating a condition. However, because the conditions at one level in the tree are evaluated top-down in the order they appear, the order of conditions within one level can have an effect on performance. Therefore, if one condition is more likely than another, declare it first or move it before less likely conditions.

Any item in the tree including the items beneath it can be removed by selecting **Remove**. Pressing the back button on the browser also causes any changes to be discarded. Remove items with care because no cut, paste, or undo capability is provided. Changes are not committed until you select **Update map** or **Remove map**.

The symbol [**!**] at the beginning of any item in the tree indicates that the configuration specified at that level of the tree is incomplete and must be updated before the multi-field map can be added or updated.

Option Data

An **Option Data** key builder obtains one or more key values from a flow and performs a look up using this result from an option data cache. The result of the mapping is the corresponding value from option data that was specified in the option data cache entry definition. The **Option Data** key builder has the following attributes.

Attribute	Description
Output name	Column name in output.
Option data map entry	ID of an option-data-map-entry element declared in option-data-map in XML configuration.
Keys	ID of one or more key builders to produce values corresponding with the keys in the specified option-data-map-entry.

Site Name

The **Site Name** key builder resolves the customer site name from the input interface field. It has the following attributes:

Attribute	Description
Output name	Column name in output.
Field	ID of the field to obtain from a flow.
Allow null value	If *not* selected, an error is logged if a flow does not contain the indicated field

This key builder requires configuration in the **config/vpn.conf** file. You must include one row to correspond to each PE device VPN interface that export NetFlow packets to this NFC server. The rows in this file contains five fields, in the following order: exporting device (PE) IP address, interface name, name of the site to which this interface is connected, CE to which this interface is connected, and customer name. These fields should be separated by commas. See the following example:

```
172.20.98.250,FastEthernet0/1.401,vpn1-branchB,CERouter-3,Cisco
172.20.98.250,FastEthernet0/1.601,vpn2-branchB,CERouter-4,IBM
172.20.98.248,FastEthernet2/1,vpn2-branchA,CERouter-2,IBM
172.20.98.246,FastEthernet0/1,vpn1-branchA,CERouter-1,Cisco
```

String

A **String** key builder obtains a UTF-8 string value from a flow. It has the following attributes.

Attribute	Description
Output name	Column name in output.
Field	ID of the field to obtain from a flow.
Regrex filter	If specified, the regular expression is applied to the string in flow data. The first matching sequence becomes the value of the key. If the regrex contains one or more capturing groups, the first match is returned.
Allow null value	If *not* selected, an error is logged if a flow does not contain the indicated field

Subnet Address

A **Subnet Address** key builder obtains an IP address and mask from a flow, applies the mask to the address, and outputs a network address in the format n.n.n.n/m. It has the following attributes.

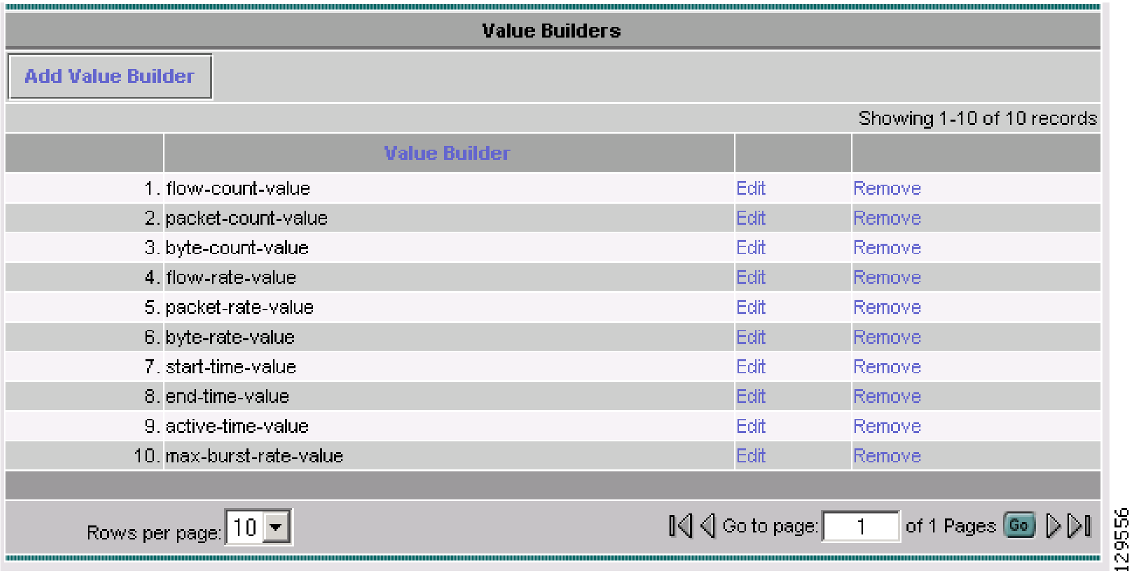
Attribute	Description
Output name	Column name in output.
Address field	ID of the address field to obtain from a flow.
Mask field	ID of the mask field to obtain from a flow.
Allow null value	If *not* selected, an error is logged if a flow does not contain the indicated field

Value Builders

A value builder is associated with one or more fields in flow data and produces a non-key value in an aggregation record. A value builder can be referenced by an Aggregation Scheme and corresponds with one column in a NetFlow Collector output file.

Clicking on the **Value Builders** folder of the navigation tree displays a table of all existing value builders, as shown in Figure 2-11. Click on the appropriate link to modify or remove a value builder.

Figure 2-11 Value Builders



Value Builders

Add Value Builder

Showing 1-10 of 10 records

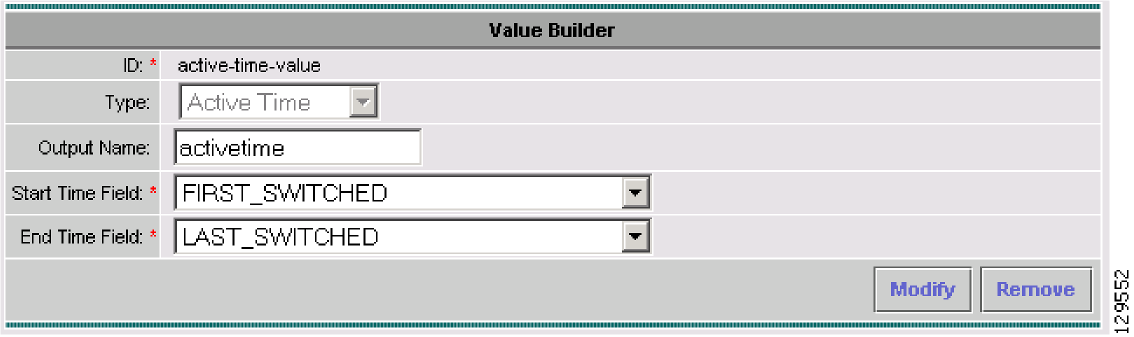
	Value Builder		
1.	flow-count-value	Edit	Remove
2.	packet-count-value	Edit	Remove
3.	byte-count-value	Edit	Remove
4.	flow-rate-value	Edit	Remove
5.	packet-rate-value	Edit	Remove
6.	byte-rate-value	Edit	Remove
7.	start-time-value	Edit	Remove
8.	end-time-value	Edit	Remove
9.	active-time-value	Edit	Remove
10.	max-burst-rate-value	Edit	Remove

Rows per page: 10   Go to page: 1 of 1 Pages Go

Click on **Add Value Builder** to bring up an empty form for defining a new value builder. A value builder is created by specifying its type, associating it with a field (sometimes two or more fields such as for the Active Time type as shown in Figure 2-12), and specifying attributes specific to the selected type. Different forms are displayed depending on which value builder type is selected.

When **Add Value Builder** or **Edit** is selected, a form for editing the value builder definition is displayed. All value builders have an ID and Type. The ID must be unique for all value builders; the Type determines the algorithm used to create the value. The remaining attributes that are shown in the Value Builder form are determined by which type is selected.

Figure 2-12 Adding a Value Builder



Value Builder

ID: *	active-time-value
Type:	Active Time
Output Name:	activetime
Start Time Field: *	FIRST_SWITCHED
End Time Field: *	LAST_SWITCHED

Modify   Remove

See the "Keys and Values" section on page 4-5 for additional information about value builder definitions.

Active Time

The **Active Time** value builder obtains a start time and an end time from fields in a flow and calculates the difference. It has the following attributes.

Attribute	Description
Name	Column name in output.
Start time field	ID of the start time field to obtain from a flow.
End time field	ID of the end time field to obtain from a flow.
Usage	Always leave set as **Count**.

Directional Sum

The **Directional Sum** value builder obtains an integer value from a field in a flow and adds it to a count if the flow direction agrees with what you specify with the Egress attribute. It has the following attributes.

Attribute	Description
Output Name	Column name in output.
Field	ID of the integer field to obtain from a flow.
Egress	Boolean attribute to indicate if flow direction is egress or not.

End Time

The **End Time** value builder obtains an end time from a field in a flow. It has the following attributes.

Attribute	Description
Name	Column name in output.
End time field	ID of the end time field to obtain from a flow.

Flow Count

The **Flow Count** value builder increments a count for each flow. It has the following attributes.

Attribute	Description
Name	Column name in output.
Usage	Always leave set as **Count**.

Max Flow Byte Rate

The **Max Flow Byte Rate** value builder determines the byte rate for each received flow and outputs the highest value found for all flows in an aggregation period. This builder was referred to as Max Burst Rate in previous releases. It has the following attributes.

Attribute	Description
Name	Column name in output.
Start time field	ID of the start time field to obtain from a flow.
End time field	ID of the end time field to obtain from a flow.
Byte count field	ID of the byte count field to obtain from a flow.
Usage	Always leave set as **Maximum**.

Rate

The **Rate** value builder determines a rate by dividing the result of another value by the amount of time in the aggregation period. It has the following attributes.

Attribute	Description
Name	Column name in output.
Quantity value	ID of another value builder used to determine the quantity.
Units	Scales the result to seconds or minutes.

Start Time

The **Start Time** value builder obtains a start time from a field in a flow. It has the following attributes...

Attribute	Description
Name	Column name in output.
Start time field	ID of the start time field to obtain from a flow.

Sum

The **Sum** value builder obtains an integer value from a field in a flow and adds it to a count. It has the following attributes.

Attribute	Description
Name	Column name in output.
Field	ID of the integer field to obtain from a flow.
Allow null value	If not selected and the flow does not contain the specified field, an error is logged.

Sum with Sampling Estimation

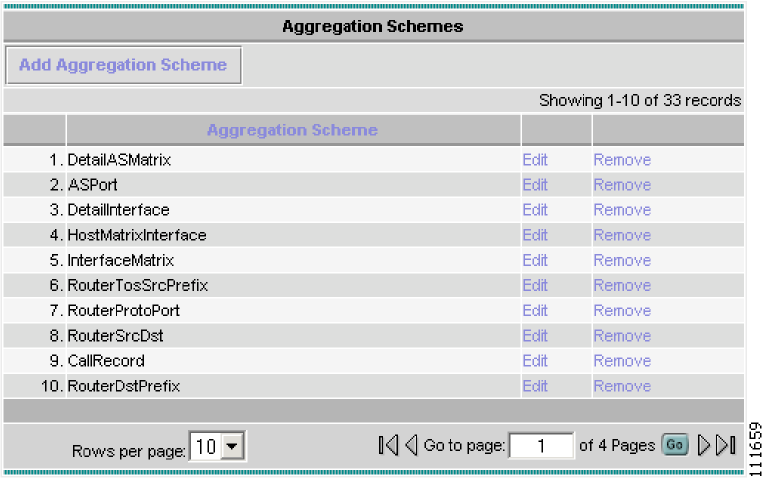
The **Sum with Sampling Estimation** value builder obtains an integer value from a field in a flow, multiplies by the sampling rate in effect, and adds the estimate to a count. If not used with V9 export, the value is not scaled because the sampling rate is not known. It has the following attributes.

Attribute	Description
Name	Column name in output.
Field	ID of the integer field to obtain from a flow.
Sampling Interval Builder ID	Always use the default value.
Allow null value	If not selected and the flow does not contain the specified field, an error is logged.

Aggregation Schemes

Aggregation schemes define the set of keys and values used for aggregation and that appear in the Cisco NetFlow Collector output files. Clicking on the **Aggregation Schemes** folder of the navigation tree displays a table of all existing aggregation schemes, as shown in Figure 2-13. Click on the appropriate link to modify or remove an aggregation scheme. Click on **Add Aggregation Scheme** to bring up an empty form for defining a new aggregation scheme.

Figure 2-13 Aggregation Schemes



Aggregation Schemes

Add Aggregation Scheme

Showing 1-10 of 33 records

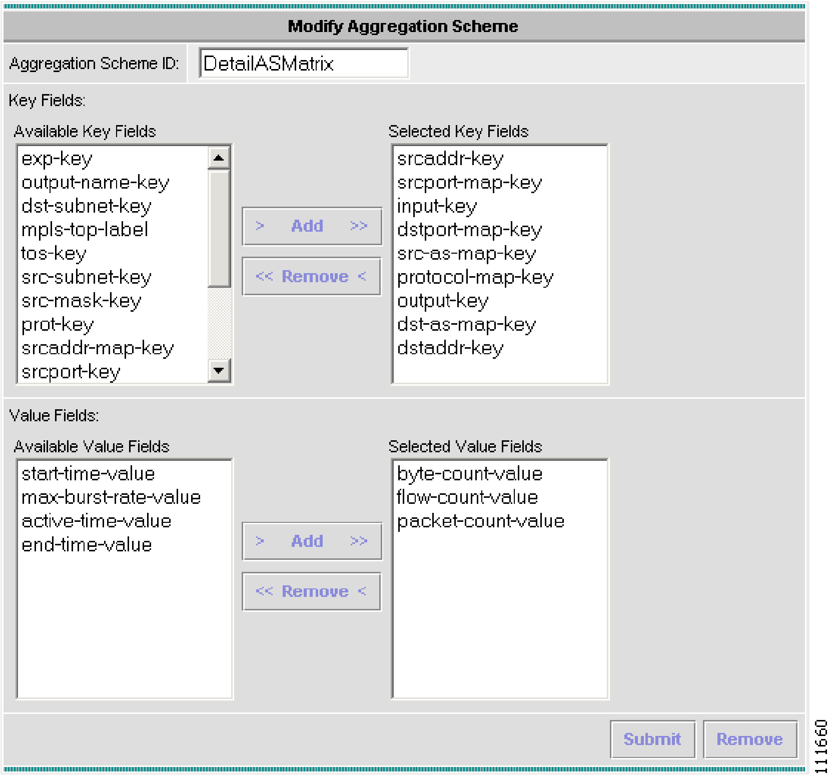
	Aggregation Scheme		
1.	DetailASMatrix	Edit	Remove
2.	ASPort	Edit	Remove
3.	DetailInterface	Edit	Remove
4.	HostMatrixInterface	Edit	Remove
5.	InterfaceMatrix	Edit	Remove
6.	RouterTosSrcPrefix	Edit	Remove
7.	RouterProtoPort	Edit	Remove
8.	RouterSrcDst	Edit	Remove
9.	CallRecord	Edit	Remove
10.	RouterDstPrefix	Edit	Remove

Rows per page: 10

Go to page: 1 of 4 Pages

The **Add Aggregation Scheme** and **Modify Aggregation Scheme** in windows, as shown in Figure 2-14, are identical with the exception that you cannot change the Aggregation Scheme ID on the Modify Aggregation Scheme window. Use this form to select key and value fields and click **Add** or **Modify** respectively to complete the operation. From the **Modify Aggregation Scheme** window you can also remove the currently displayed aggregation scheme.

Figure 2-14 Modify Aggregation Scheme



Modify Aggregation Scheme

Aggregation Scheme ID: DetailASMatrix

Key Fields:

Available Key Fields:
exp-key
output-name-key
dst-subnet-key
mpls-top-label
tos-key
src-subnet-key
src-mask-key
prot-key
srcaddr-map-key
srcport-key

Selected Key Fields:
srcaddr-key
srcport-map-key
input-key
dstport-map-key
src-as-map-key
protocol-map-key
output-key
dst-as-map-key
dstaddr-key

Value Fields:

Available Value Fields:
start-time-value
max-burst-rate-value
active-time-value
end-time-value

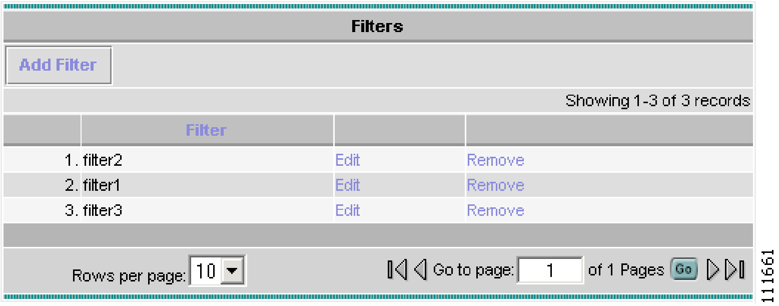
Selected Value Fields:
byte-count-value
flow-count-value
packet-count-value

Note Removing an aggregation scheme that is in use by an aggregator can succeed but cause an invalid reference after the collector is restarted.

Filters

Filters provide a way to limit the amount and content of data that an aggregator processes. Clicking on the **Filters** folder of the navigation tree displays a table of all existing filters, as shown in Figure 2-15. Click on the appropriate link to modify or remove a filter. Click on **Add Filter** to bring up an empty form for defining a new filter.

Figure 2-15 Filters



Filters

Showing 1-3 of 3 records

	Filter		
1.	filter2	Edit	Remove
2.	filter1	Edit	Remove
3.	filter3	Edit	Remove

Rows per page: 10 Go to page: 1 of 1 Pages

When adding and editing filters the windows are identical with the exception that you cannot change the **Filter ID** when modifying a filter. Use this form to add, remove, and order filter conditions.

The Filter editor is applet-based. A tree on the left hand side of the filter editor shows the elements of the filter. A form on the right hand side of the filter editor contains the attributes for the currently selected item in the tree.

The top item of the tree contains a unique identifier for the filter. Directly beneath the top of the tree is one filter condition or filter expression. Add the top-level filter condition or expression by selecting Add condition or Add expression when the top item is selected.

A filter condition performs an equality check on the output value of a key builder that is invoked for each flow. The type of a filter condition is either an integer condition, address condition, string condition, or nde-source condition. Depending on which condition type you select, only the key builders that produce that type of value can be selected. The nde-source condition checks the address of the device from which the flow originated.

When creating a filter condition, specify:

- Whether the equality check is **equals** or **not-equals**
- Which key builder creates the value to be checked

In addition, an address condition accepts an optional integer mask value that is applied to the address before the equality check is performed. If the mask field is left blank, no mask is applied.

Directly beneath the filter condition is one or more value or range items. These determine the set of target values to which the equality check is applied. Add a value or range to the filter condition by selecting **Add value** or **Add range**. For an integer condition, only integer values and ranges can be entered; only IP address values can be entered for address filter conditions. An nde-source condition accepts only IP address values. Note that ranges cannot be entered for string filter conditions, only single values.

Boolean logic is applied to two or more filter conditions using a filter expression. A filter expression can also appear within an expression in place of a filter condition.

To create a filter expression, specify the logical operator **and**, **or**, **nand** (not-and), or **nor** (not-or) and select **Add expression**. An expression must contain at least two other conditions or expressions.

The conditions and expressions within an expression are evaluated in top-down order. Evaluation performance for an expression can be optimized by placing conditions and expressions which are more likely to occur to the top. Select an item then select **Move** to move the item up until it reaches the top; selecting **Move** again cycles the item to the bottom.

Any item in the tree including the items beneath it can be removed by selecting **Remove**. Pressing the back button on the browser also causes any changes to be discarded.

Note Remove items with care since no cut, paste, or undo capability is provided. Changes are not committed until you select **Update filter** or **Remove filter**.

The symbol [**!**] at the beginning of any item in the tree indicates that the configuration specified at that level of the tree is incomplete and must be updated before the filter can be added or updated.

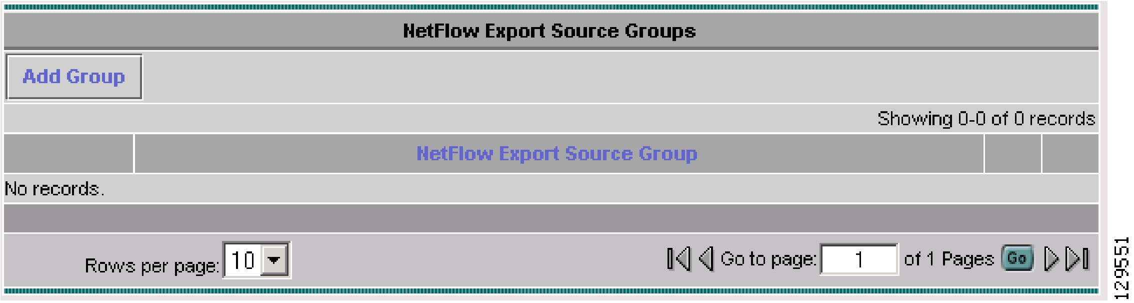
NetFlow Export Source Groups

By default, flows are aggregated with other flows from the source address of the originating device. However, if multiple source addresses appear in one export Source Group, flows from these multiple sources are aggregated together.

Note The collector must be restarted for configuration changes to an existing source group to take effect.

Click on the **NetFlow Export Source Groups** folder of the navigation tree to display a table of currently defined source groups, as shown in Figure 2-16. Click on the appropriate link to modify or remove a group. Click **Add Group** to bring up an empty form for defining a new source group.

Figure 2-16 NetFlow Export Source Groups



Showing 0-0 of 0 records

NetFlow Export Source Group

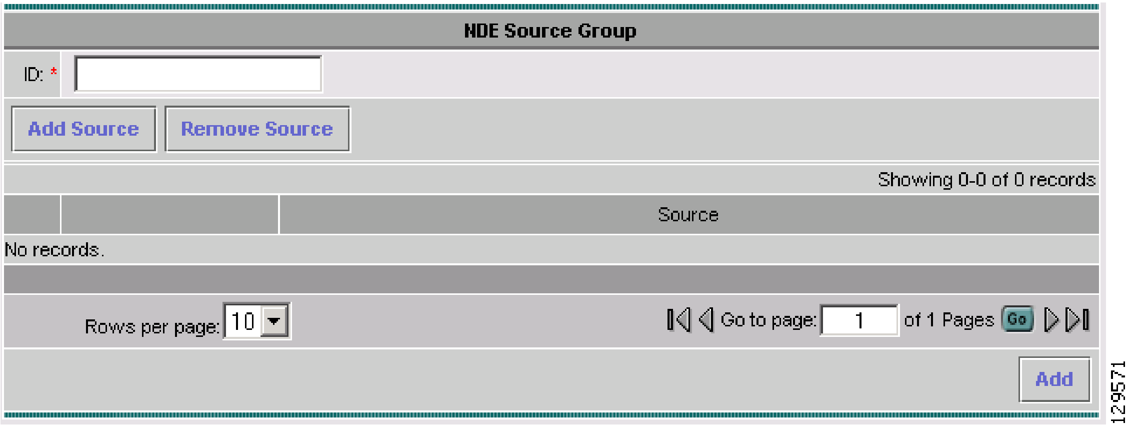
No records.

Rows per page: 10

Go to page: 1 of 1 Pages

The **NDE Source Group** window, as shown in Figure 2-17, is shown when adding or modifying a source group. Fill in the form and click **Add** or **Modify** to complete the operation. Select **Add Source** to add an IP address to the group. From the **Modify** window you can also remove the currently displayed source group. See the "Creating Source Groups" section on page 4-24 for additional information about source groups.

Figure 2-17 NDE Source Group



ID: *

Showing 0-0 of 0 records

Source

No records.

Rows per page: 10

Go to page: 1 of 1 Pages

NetFlow Export Source Access List

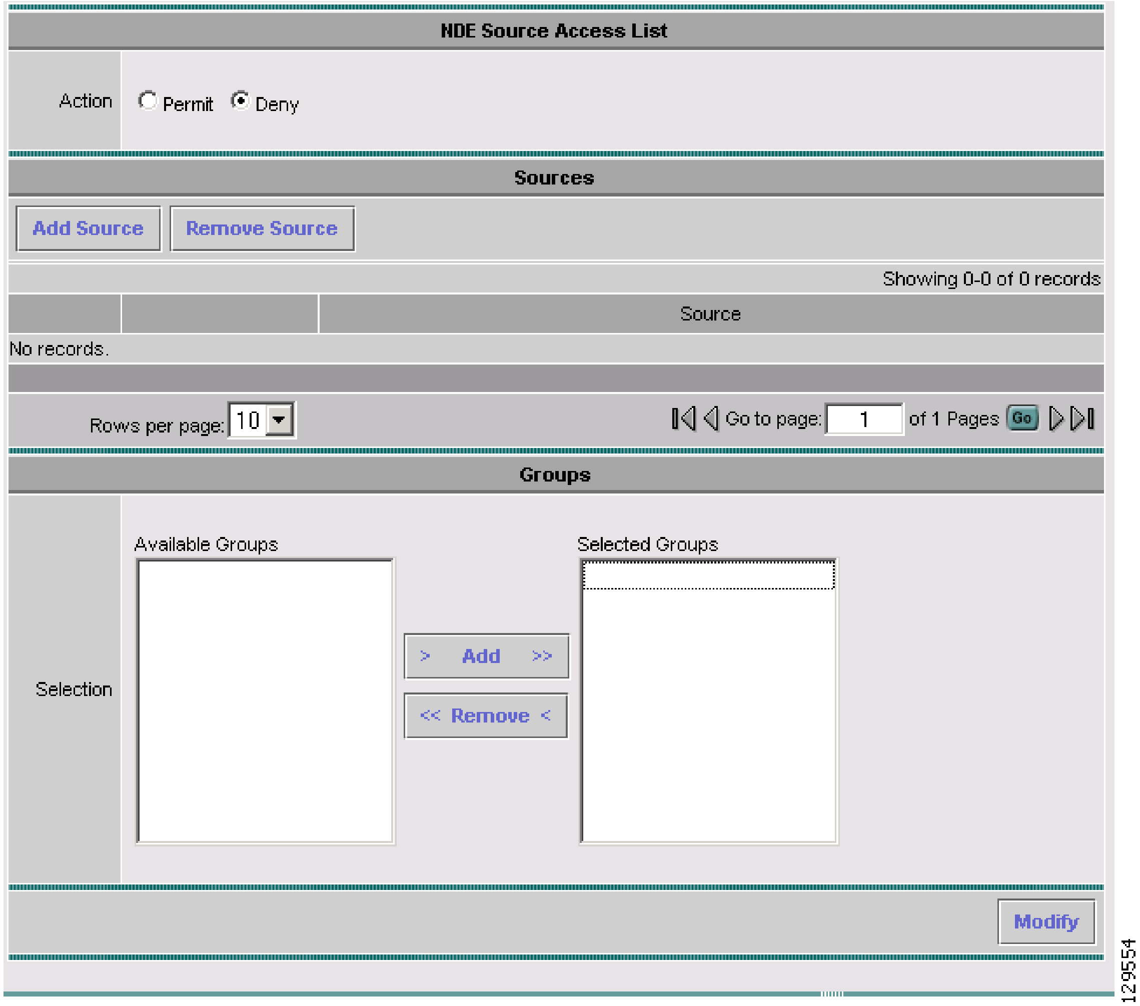
By default, Cisco NetFlow Collector collects from any device that sends NetFlow data to it. However, by specifying a NetFlow Export Source Access List, you can configure Cisco NetFlow Collector to reject data from certain devices or to accept data only from certain devices.

Note The collector must be restarted for configuration changes to the source access list to take effect.

Click on the **NetFlow Export Source Access List** folder of the navigation tree to display the current access list, as shown in Figure 2-18. If Action is **Permit**, NetFlow data is permitted only from the selected devices and groups; if Action is **Deny**, NetFlow data is rejected from the selected devices and groups.

Click on the appropriate link to add or remove a source device or group. Note that groups are obtained from the NetFlow Export Source Groups page. See the "Creating Access Lists" section on page 4-24 for additional information about configuring source access lists.

Figure 2-18 NDE Source Access List



NDE Source Access List

Action ○ Permit ● Deny

Sources

Showing 0-0 of 0 records

		Source

No records.

Rows per page: 10

Go to page: 1 of 1 Pages

Groups

Selection

Available Groups

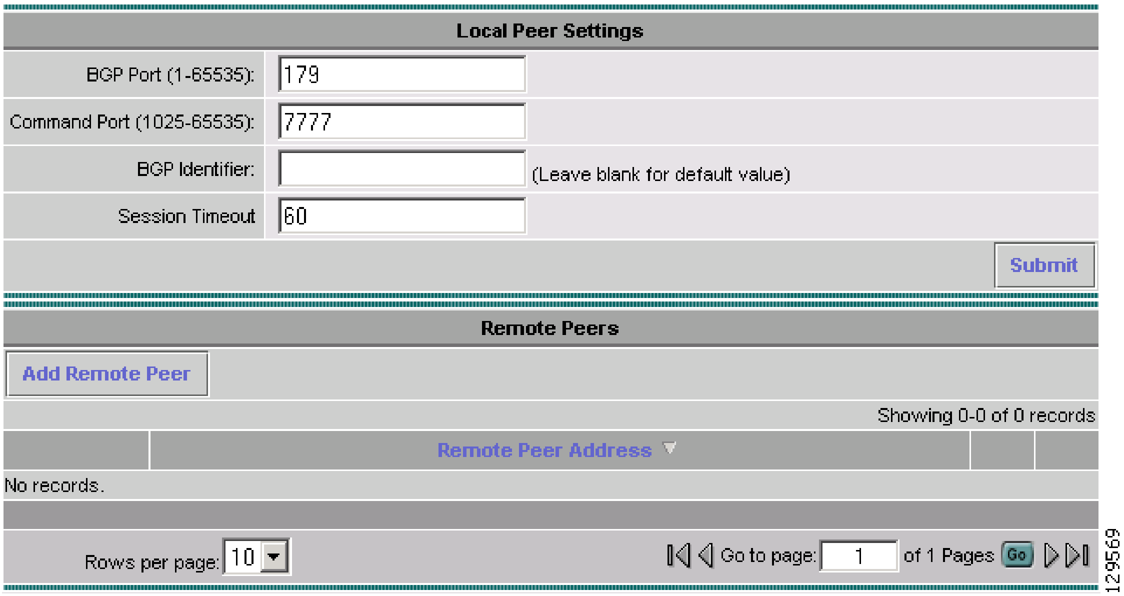
Selected Groups

BGP Peer

Click the **BGP Peer** folder of the NFC UI navigation tree to display the configuration for the Cisco NetFlow Collector BGP peer, as shown in Figure 2-19. Click on **Add Remote Peer** to specify a new BGP peer. If the BGP Identifier field is left blank, the BGP identifier of the Cisco NetFlow Collector BGP peer defaults to the integer value of this host's IP address.

Note The BGP Peer must be stopped and restarted for configuration updates to take effect. See the "BGP Peer" section on page 5-8 for additional information about BGP Peer configuration.

Figure 2-19 Local Peer Settings Window



Local Peer Settings

BGP Port (1-65535):	179	
Command Port (1025-65535):	7777	
BGP Identifier:		(Leave blank for default value)
Session Timeout	60	

Remote Peers

Showing 0-0 of 0 records

	Remote Peer Address ▽		

No records.

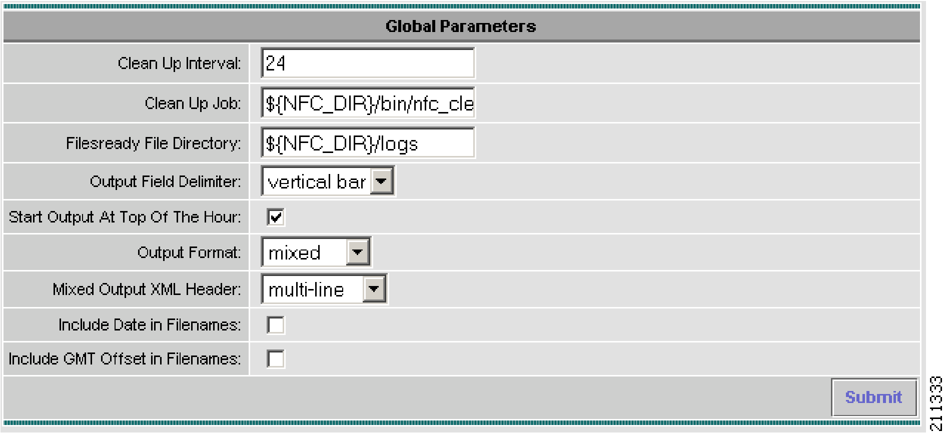
Rows per page: 10

Go to page: 1 of 1 Pages

Global

The settings in Figure 2-20 affect how the Cisco NetFlow Collector works in general. They are not specific to any aggregator, aggregation-scheme, or filter. Make any changes necessary and click **Submit** to store them. Some settings do not take affect until the Cisco NetFlow Collector is restarted.

Figure 2-20 Global Parameters Window



Global Parameters

Clean Up Interval:	24
Clean Up Job:	${NFC_DIR}/bin/nfc_cle
Filesready File Directory:	${NFC_DIR}/logs
Output Field Delimiter:	vertical bar
Start Output At Top Of The Hour:	☑
Output Format:	mixed
Mixed Output XML Header:	multi-line
Include Date in Filenames:	☐
Include GMT Offset in Filenames:	☐

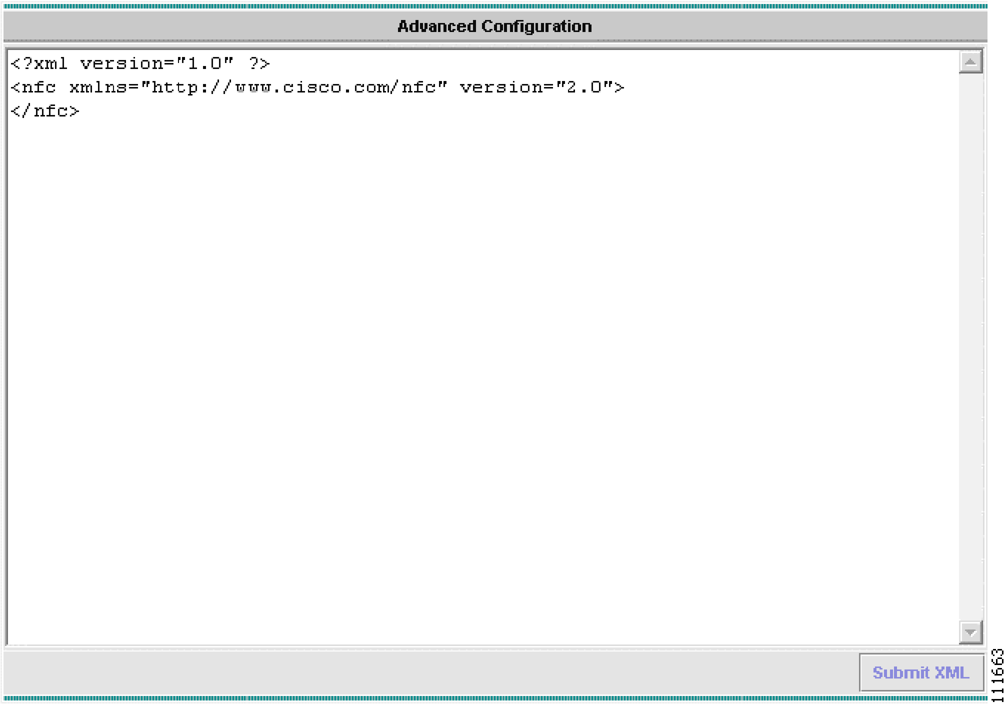
Advanced

The Advanced window lets you send any XML request to the collector. Clicking on the **Advanced** node in the NFC UI navigation tree brings up a form with a template for an XML request. Add the content of the XML request inside the **<nfc>** tag. See the "Supported XML Requests" section on page E-3 for a description of valid XML requests.

In limited cases where the configuration is more complex than the web-based UII supports, you will be directed to the **Advanced** window and the XML for the selected component will appear in the text area. Changes can then be made and submitted by clicking **Submit XML**.

XML responses from the collector are displayed in Figure 2-21 in the text area after submitting a request.

Figure 2-21 Advanced Configuration Window



Advanced Configuration

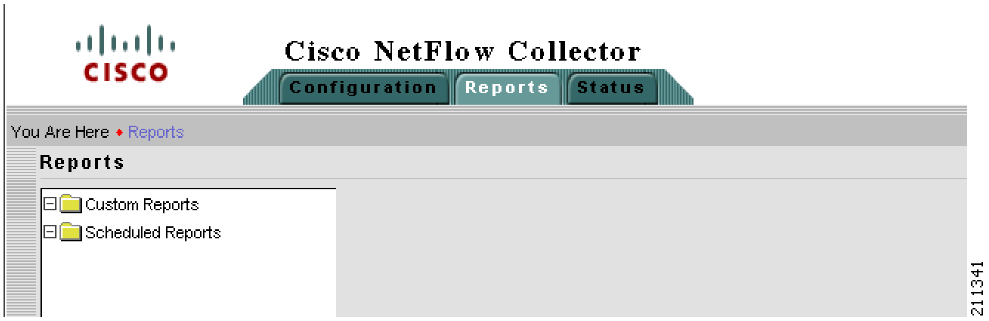
```
<?xml version="1.0" ?>
<nfc xmlns="http://www.cisco.com/nfc" version="2.0">
</nfc>
```

Reports

Cisco NetFlow Collector reports are in effect a summary of the NetFlow Collector's aggregated output. NetFlow data is first aggregated into NetFlow Collector output files by the collector, and then the data in those files is further aggregated to generate a report. Reports are either custom (run immediately) or scheduled.

From the Cisco NetFlow Collector **Main** window, click the **Reports** tab. The Reports window appears, as shown in Figure 2-22.

Figure 2-22 Reports Window



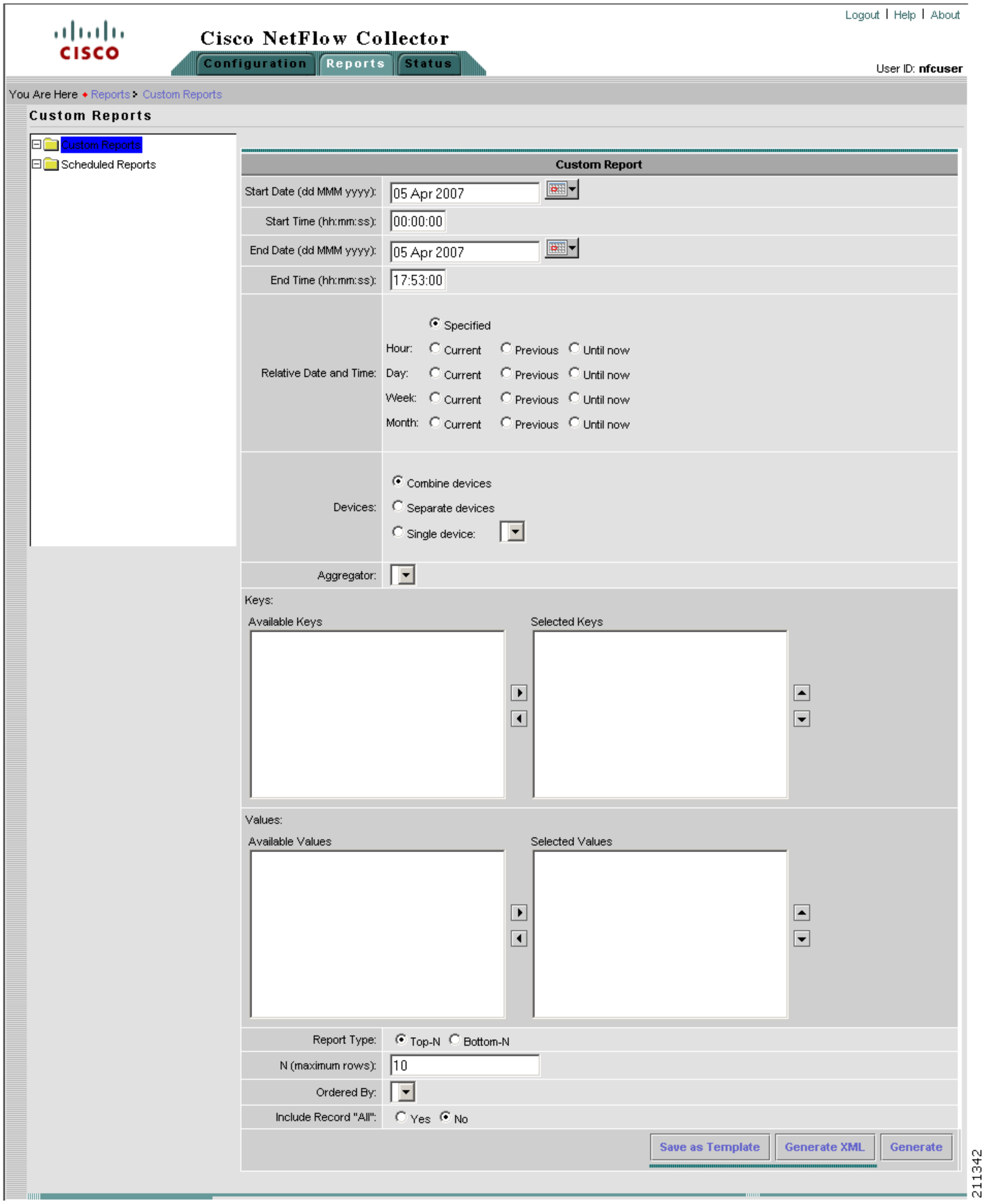
From this window you can select the following:

- Custom Reports, page 2-32
- Scheduled Reports, page 2-37

Custom Reports

Custom reports are generated on demand from the NetFlow Collector output files on the collector machine. From the **Custom Reports** window, as shown in Figure 2-23, you can specify data that you want in the report and how you want it aggregated.

Figure 2-23 Custom Reports Window



Start Date (dd MMM yyyy):	05 Apr 2007
Start Time (hh:mm:ss):	00:00:00
End Date (dd MMM yyyy):	05 Apr 2007
End Time (hh:mm:ss):	17:53:00
Relative Date and Time:	● Specified Hour: ○ Current ○ Previous ○ Until now Day: ○ Current ○ Previous ○ Until now Week: ○ Current ○ Previous ○ Until now Month: ○ Current ○ Previous ○ Until now
Devices:	● Combine devices ○ Separate devices ○ Single device:
Aggregator:	

Keys:

Available Keys

Selected Keys

Values:

Available Values

Selected Values

Report Type:	● Top-N ○ Bottom-N
N (maximum rows):	10
Ordered By:	
Include Record "All":	○ Yes ● No

The fields of the Custom Reports form are described in Table 2-2.

Table 2-2 Custom Reports Fields

Field	Value	Description
Start Date	A date string in the format of dd MMM yyyy where dd is the day of the month, MMM is the abbreviated name of the month, and yyyy is the four digit year. For example, 01Jan2074 for January 1st, 2007.	The data for the report will come from Cisco NetFlow Collector output files that were generated on or after this date.
Start Time	A time string in the format of hh:mm:ss where hh is the hour of the day in 24 hour notation, mm is the minute of the hour, and ss is the seconds of the minute. For example, 13:05:00 for 1:05PM and 0 seconds.	The data for the report will come from Cisco NetFlow Collector output files that were generated at or after this time.
End Date	A date string in the format of dd MMM yyyy where dd is the day of the month, MMM is the abbreviated name of the month, and yyyy is the four digit year. For example, 01Jan2007 for January 1st, 2007.	The data for the report will come from Cisco NetFlow Collector output files that were generated on or before this date.
End Time	A time string in the format of hh:mm:ss where hh is the hour of the day in 24 hour notation, mm is the minute of the hour, and ss is the seconds of the minute. For example, 13:05:00 for 1:05PM and 0 seconds.	The data for the report will come from Cisco NetFlow Collector output files that were generated at or before this time.
Relative Date and Time	Either the start and end date and time specified, or the calculated hour, day, week, or month relative to the current time. Also useful when creating report templates that are recalled and run later at the same relative time.	Selecting a relative time sets the start and end time relative to the current time. For example, if you select **Current hour**, the time range starts at the current hour of the day. If you select **Previous hour,** the last entire hour is shown. If you select **Until now**, the time range is set to end at the current time.

Table 2-2 Custom Reports Fields (continued)

Field	Value	Description
Devices	**Combine devices**, **Separate devices**, or **Single device**. For **Single device** the value should be the IP address of the device.	**Combine devices** specifies that the report will aggregate data from different exporting devices into records based solely on the specified keys (See below). Each row of the report will contain a ***** for the value of the Device column. **Separate devices** specifies that the report will treat the exporting device as an additional key for aggregation. As a result, data from different devices will not be aggregated together and the exporting device that generated the report data will be the value of the Device column for each row of the report. **Single device** allows you to filter report data to that which came from a single exporting device. The IP address of the exporting device will be the value of the Device column for each row of the report. In NFC Release 6.0, a selection box is provided for specifying a single device. You can select any device for which data is available. If the selections set is empty, no data is available for the selected aggregator.
Aggregator	One of the defined aggregators	The report data will come from the Cisco NetFlow Collector output files of this single aggregator.
Keys	The set of keys that are defined in the aggregation scheme used by the selected aggregator, or a subset of these keys.	Report data will be aggregated for each unique combination of keys selected for the report. Using a subset of keys reduces the system memory required to generate the report.
Values	The set of values that are defined in the aggregation scheme used by the selected aggregator, or a subset of these values.	Value columns of the report are aggregated for each unique combination of keys selected for the report. Using a subset of values reduces the system memory required to generate the report. In NFC Release 6.0, three sets of value selections are provided. The first is the set of value columns available in output data. For integer values, the second and third sets allow per-minute and per-second rates calculated over the reporting period to be selected.

Table 2-2 Custom Reports Fields (continued)

Field	Value	Description
Report Type	Top-N or Bottom-N	Specifies if the report shows the Top-N or Bottom-N values as determined by the **Ordered By** value selection.
N (Maximum Rows)	A positive integer, *N*, no greater than 2147483647. Default value is 10.	The maximum number of rows the report should contain for each exporting device. The total number of unique records in all the Cisco NetFlow Collector data files being reported can be much greater than the number of the records one might want to present in a report. Use this field to limit the number of records contained in the report. You can sort all aggregated unique records in descending (or ascending) order, according to a user-specified value field, and present the first or last *N* records in the report. To show the relative magnitude of data that is not displayed, all records , not just those returned, can be optionally aggregated in to one record with key value of **All**.
Include Record **All**	**Yes** or **No**. The default value is **No**.	Specifies whether to include the record with key value of **All**. If set to **Yes**, the **All** record will be calculated and appear in the report.

After filling in the fields in the **Custom Report** window, you can select one of the following actions:

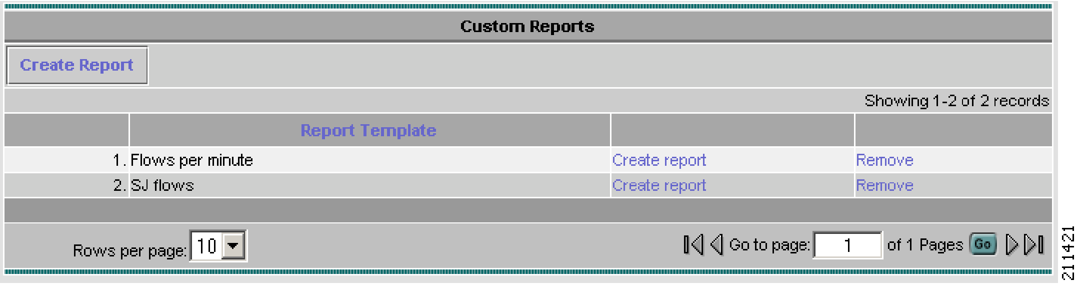
- **Generate**—Runs the report in a separate browser window. A progress bar is shown until the report is displayed.
- **Generate XML**—Displays the underlying report XML in the browser window, which you can save as a file.
- **Save as Template—**Saves the report form contents as a template.

Report Templates

In NetFlow Collector Release 6.0, Report Templates replace and improve upon the Common Reports feature in previous releases. You can save the contents of a partially filled out custom report form as a template by selecting **Save as Template** and naming the template. You can then recall the template at any later time to run the report. This is particularly useful when used in conjunction with a relative date and time specification in the custom report form.

Report Templates are listed in the navigation tree under **Custom Report**s. When you select **Custom Reports** in the navigation tree, the list of Report Templates is displayed as displayed in Figure 2-24. To run a report based on the template, select the template name in the navigation tree or select **Create report** in the report template list. You can remove a template by selecting **Remove** in the Report Template list.

Figure 2-24 Report Templates List



Custom Reports

Create Report

Showing 1-2 of 2 records

	Report Template		
1.	Flows per minute	Create report	Remove
2.	SJ flows	Create report	Remove

Rows per page: 10

Go to page: 1 of 1 Pages Go

If you select **Save as Template** in a custom report form that was created from a template, you can modify the template definition if you keep the existing template name when prompted for the name. You can also create a new template by specifying a new name.

For example, to create an hourly top-talkers report template for the previous hour, do the following:

Step 1 Navigate **Reports > Custom Reports.**

Step 2 Click the **Previous hour** radio button to specify the **Relative Date and Time**.

Step 3 Select the **Devices** strategy to use. Specify either **Combined devices** or **Single device**.

Step 4 Select an aggregator whose aggregation scheme contains the **srcaddr** key and **octets** value.

Step 5 Select the **srcaddr** key and **octet** value.

Step 6 Click **Save as Template.**

Step 7 Enter the template name as **previous-hour-top-talkers** and click **OK**.

The template is saved. You can recall this template and run a report listing the previous hour's top talkers at any time.

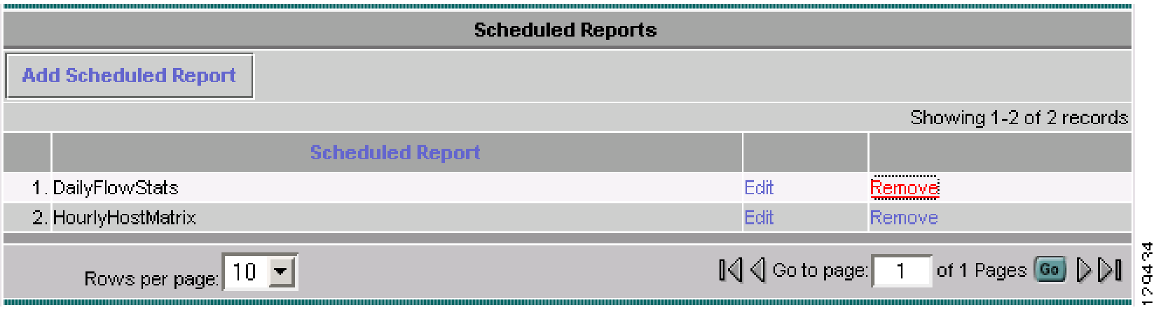
Scheduled Reports

Scheduled reports are generated by the Report Generator on a regular basis. Beginning with Cisco NetFlow Collector 5.0.2, the Report Generator supports running multiple types of reports simultaneously. You can configure the scheduled reports using the web-based UI.

Configuring Scheduled Reports

Clicking on the **Scheduled Reports** folder in the navigation tree displays a table of all existing types of scheduled reports, as shown in Figure 2-25.

Figure 2-25 Scheduled Reports Window



Scheduled Reports

Add Scheduled Report

Showing 1-2 of 2 records

	Scheduled Report		
1.	DailyFlowStats	Edit	Remove
2.	HourlyHostMatrix	Edit	Remove

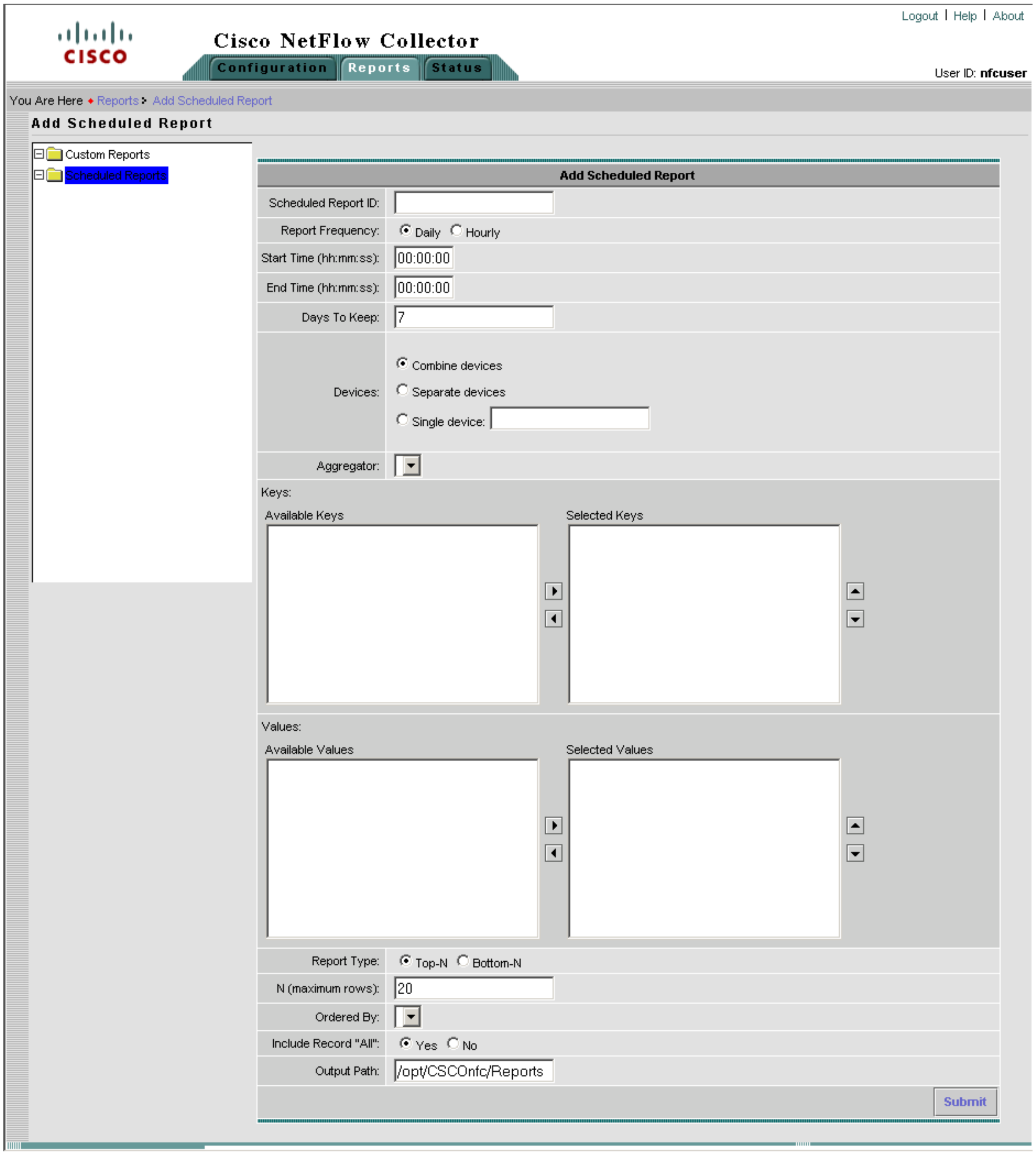
Rows per page: 10

Go to page: 1 of 1 Pages Go

Clicking **Add Scheduled Report** brings up the **Add Scheduled Report** window to add a new scheduled report. Clicking **Edit** in any row in the list of scheduled reports displays the **Modify Scheduled Report** window to modify the selected scheduled report. Clicking **Remove** in any row deletes the selected schedule report. The **Add Scheduled Report** and **Modify Scheduled Report** windows, as shown in Figure 2-26, are identical with the exception that you cannot change the **Report ID** on the **Modify Scheduled Report** window. Fill in the fields and click **Submit** or **Modify** button to complete the operation.

Note Configuration updates for scheduled reports via the UI will not take effect until the Report Generator is restarted.

Figure 2-26 Add Scheduled Report



Scheduled Report ID:	
Report Frequency:	● Daily ○ Hourly
Start Time (hh:mm:ss):	00:00:00
End Time (hh:mm:ss):	00:00:00
Days To Keep:	7
Devices:	● Combine devices ○ Separate devices ○ Single device:
Aggregator:	
Report Type:	● Top-N ○ Bottom-N
N (maximum rows):	20
Ordered By:	
Include Record "All":	● Yes ○ No
Output Path:	/opt/CSCOnfc/Reports

Scheduled Report windows share many commonalities with the Custom Report window, but there are a few differences:

- There is no Start Date, Start Time, End Date and End Time fields on Scheduled Report windows, because these values are pre-determined. For daily reports, the start time is at the turn of the day and end time the turn of the next day; for hourly reports, similarly, the start time is the turn of the hour and end time the turn of the next hour.
- There are four additional fields. See Table 2-3 for descriptions.

Table 2-3 Scheduled Report Fields

Field	Value	Description
Scheduled Report ID	String containing alphanumeric characters including a hyphen (-) and underscore (_).	The ID to identify this type of report.
Report Frequency	**Daily** or **Hourly**. The default value is **Daily**.	The frequency at which this type of report is run.
Start Time	A time string in the format of hh:mm:ss where hh is the hour of the day in 24 hour notation, mm is the minute of the hour, and ss is the seconds of the minute. For example, 13:05:00 for 1:05PM and 0 seconds.	If Start Time and End Time are specified, the daily report will include data only for the time range within the day.
End Time	A time string in the format of hh:mm:ss where hh is the hour of the day in 24 hour notation, mm is the minute of the hour, and ss is the seconds of the minute. For example, 13:05:00 for 1:05PM and 0 seconds.	If Start Time and End Time are specified, the daily report will include data only for the time range within the day.
Days To Keep	A positive integer no greater than 32767. The default value is 7.	The number of days the generated reports of this type will be kept on the server. Reports of this type past this date will be purged automatically.
Output Path	Place-name of an existing directory. The default value is **/opt/CSCOnfc/Reports**.	Specifies where reports of this type will be stored. All reports of this type will be written to the subdirectory (named with the report ID) under the output path. For example, if you use the default output path **/opt/CSCOnfc/Reports** and the report ID is **foo**, all reports of type **foo** will be stored in **/opt/CSCOnfc/Reports/foo**.
Report Type	Top-N or Bottom-N	Specifies whether the report shows the Top-N or Bottom-N values as determined by the **Ordered By** value selection.

Table 2-3 Scheduled Report Fields (continued)

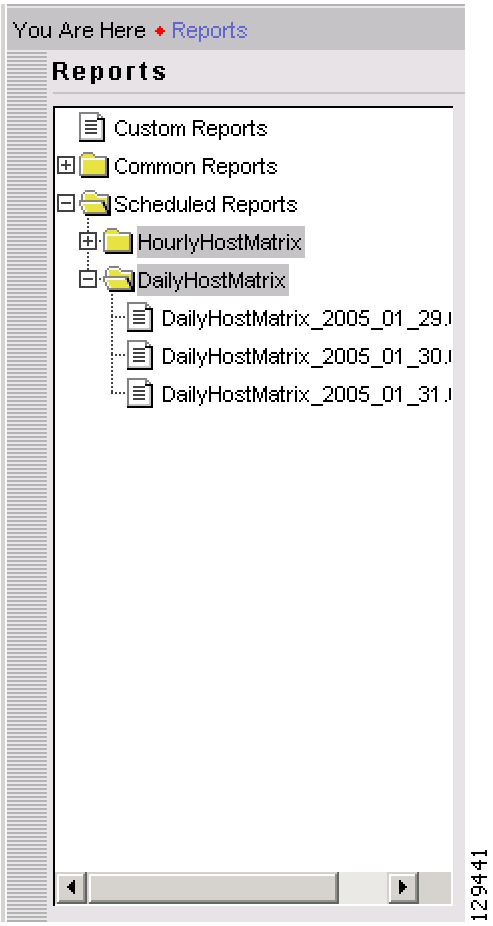
Field	Value	Description
N (maximum Rows)	A positive integer, *N*, no greater than 2147483647. Default value is 10.	The maximum number of rows the report should contain for each exporting device. The total number of unique records in all the NetFlow Collector data files being reported can be much greater than the number of the records you might want to present in a report. Use this field to limit the number of records contained in the report. You can sort all aggregated unique records in descending (or ascending) order, according to a user-specified value field, and present the first or last *N* records in the report. To show the relative magnitude of data that is not displayed, all records (not just those returned) can be optionally aggregated into one record with key value of **All**.
Ordered By	Value field name	The value field that determines report order. The first value field selected by default.
Include Record All	Yes or No. The default value is No.	Specifies whether to include the record with key value of **All**. If set to **Yes**, the **All** record will be calculated and appear in the report.

Displaying Scheduled Reports

You can use the web-based UI to view scheduled reports. The IDs of all types of defined reports display in the Reports navigation tree as subfolders of the Scheduled Reports folder, as shown in Figure 2-27. Reports generated by the Report Generate and placed in user-specified directories display as children (or leaf nodes) in the subfolders of the corresponding report type. Clicking on a report node brings up a window with that report displayed. Reports stored in the Cisco NetFlow Collector report XML format are formatted into tabular form. Reports stored in other formats are loaded as is and the presentation is left to the browser.

Note Scheduled reports do not support the advanced features, such as (Filter and Drill Down) of Custom and Common reports.

Figure 2-27 Scheduled Reports Folder



You Are Here ◆ Reports

Reports

- Custom Reports
- ⊞ Common Reports
- ⊟ Scheduled Reports
  - ⊞ HourlyHostMatrix
  - ⊟ DailyHostMatrix
    - DailyHostMatrix_2005_01_29.
    - DailyHostMatrix_2005_01_30.
    - DailyHostMatrix_2005_01_31.

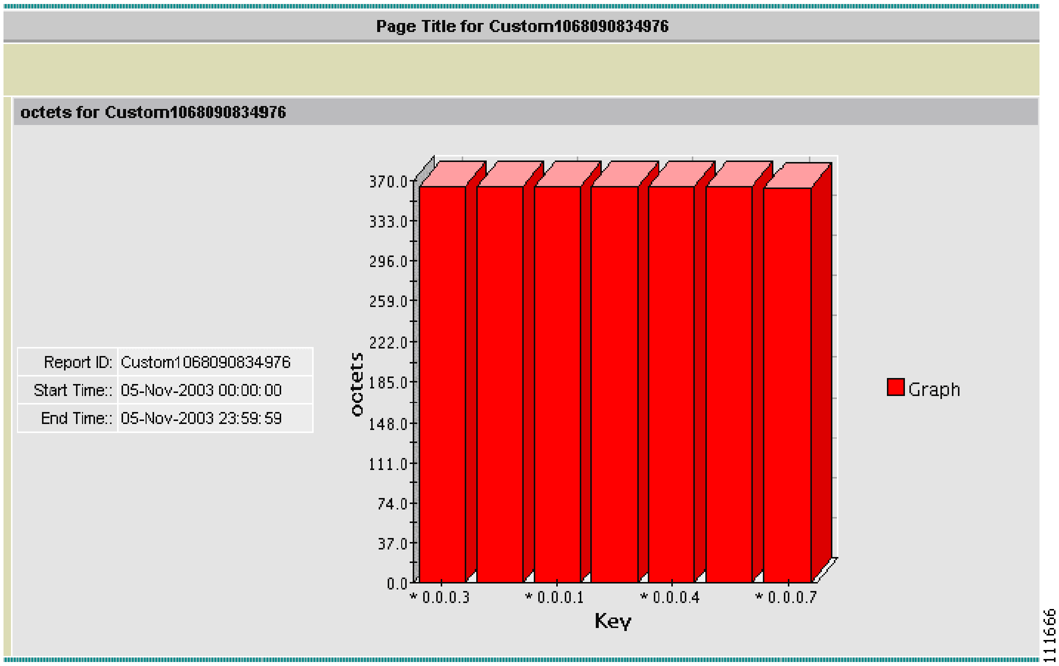
Reporting Features

Cisco NetFlow Collector enables you to sort, graph, export, filter, and drill down on report data from the Report window, as shown in Figure 2-22.

Sorting and Graphing

Each column of a report supports ascending and descending sorting. Click on the column name to sort the table on that column. Value columns support creating a bar or pie graph of the values in that column. Click on the bar graph icon to generate a bar graph of that column's values, as shown in Figure 2-28. Click on the pie graph icon to generate a pie graph of that column's values, as shown in Figure 2-29.

Figure 2-28 Sample Bar Graph

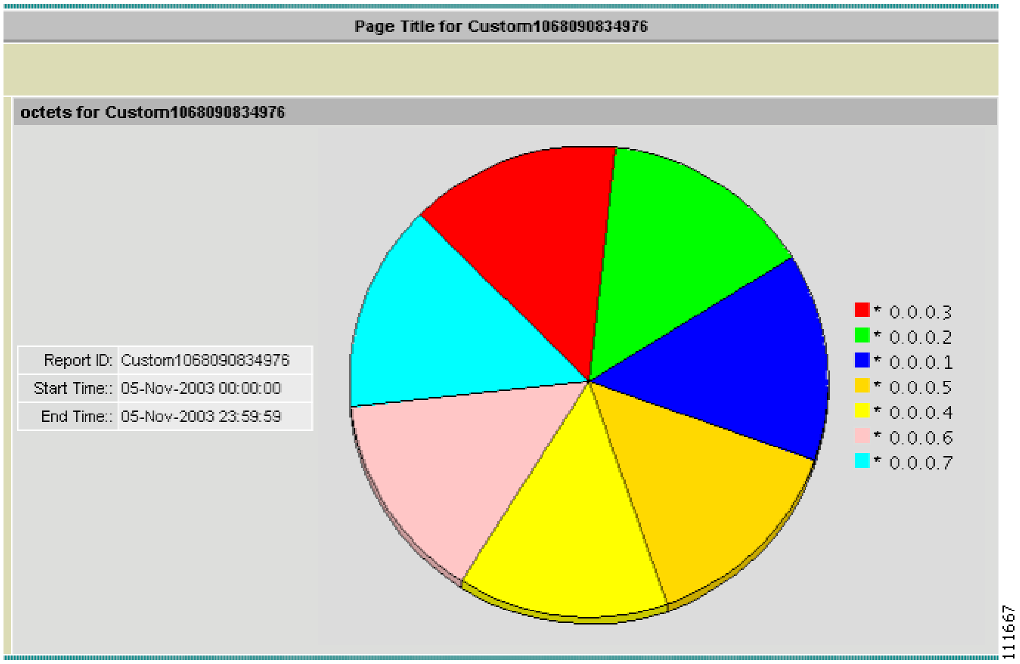


Page Title for Custom1068090834976

octets for Custom1068090834976

Report ID:	Custom1068090834976
Start Time::	05-Nov-2003 00:00:00
End Time::	05-Nov-2003 23:59:59

Figure 2-29 Sample Pie Graph



Page Title for Custom1068090834976

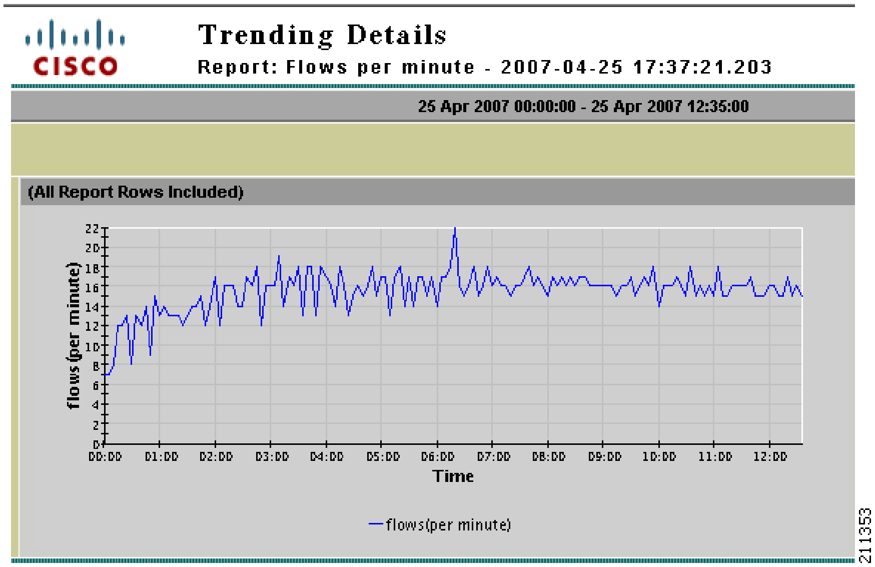
octets for Custom1068090834976

Report ID:	Custom1068090834976
Start Time::	05-Nov-2003 00:00:00
End Time::	05-Nov-2003 23:59:59

Trending

Trending reports can be launched from the Custom Report results window, as shown in Figure 2-30. This allows you to see how one or more report values vary over time for the report period. To launch the Trending report, select a result row then select the **Trending** button.

Figure 2-30 Sample Trending Graph



Trending Details

Report: Flows per minute - 2007-04-25 17:37:21.203

25 Apr 2007 00:00:00 - 25 Apr 2007 12:35:00

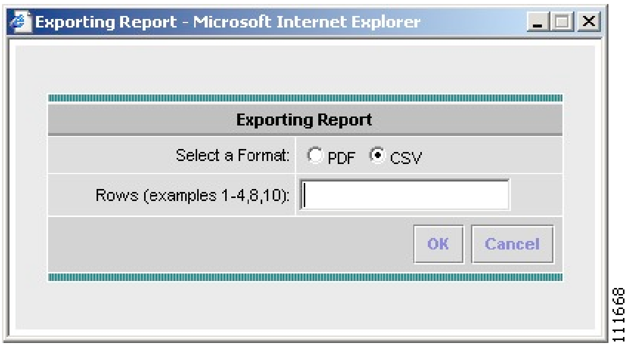
(All Report Rows Included)

Export and Print

The toolbar icons on the top right of the **Report** window allow you to export and print report data. Click on the export icon to export a report in CSV or PDF format. Click on the print icon to print the report or graph displayed in the current window.

When exporting or printing reports, you can also select which rows to include. For example, the following dialog appears when the export icon is clicked, as shown in Figure 2-31.

Figure 2-31 Exporting Report



Exporting Report - Microsoft Internet Explorer

Exporting Report

Select a Format: ○ PDF ● CSV

Rows (examples 1-4,8,10):

Filter

Use the fields at the top right of the report data to filter report data by the key values. The string entered into the text field is treated as a regular expression for matching keys. Click **Filter** to apply the filter. Clear the text field and click **Filter** to return to the original report.

Drill Down

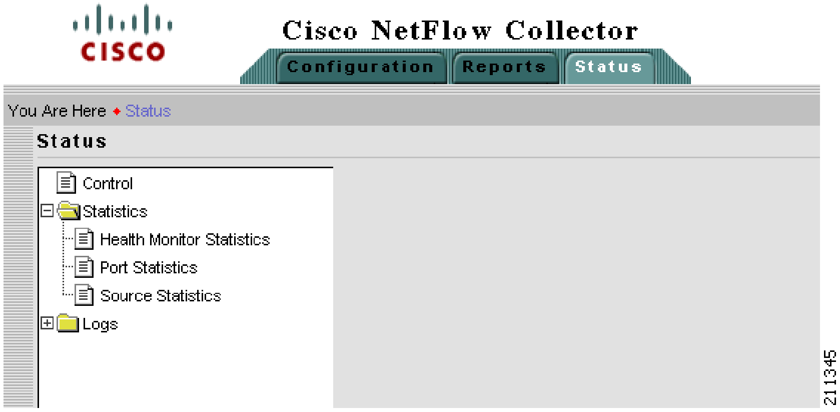
When the original Cisco NetFlow Collector output contains more keys than were used to generate a report, you can choose to *drill down* on the data by selecting a row, selecting an addition key, and clicking **Drill Down**. This will generate a new report where the original keys are fixed on the values from the selected row and the drill down key is added to break out the data.

Status

From the Status window you can view system health information about the collector. Such information includes running status, flows received statistics, flows missed statistics, and collector logs.

From the Cisco NetFlow Collector **Main** window, click the **Status** tab. The **Status** window appears, as shown in Figure 2-32.

Figure 2-32 Status Window



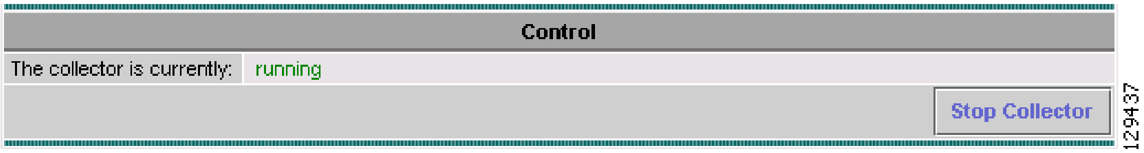
From this window you can select the following:

- Control, page 2-46
- Statistics, page 2-46
- Logs, page 2-49

Control

Clicking on the **Control** node of the navigation tree displays the running status of the collector, as shown in Figure 2-33. If the collector is running, there will be a button to stop the collector. If the collector is not running, there will be a button to start the collector. The ability to start and stop the collector from the web-based UI is useful for restarting the collector so that configuration changes can take affect. Most operations are not available when the collector is stopped.

Figure 2-33 Control Window


Control

The collector is currently: running

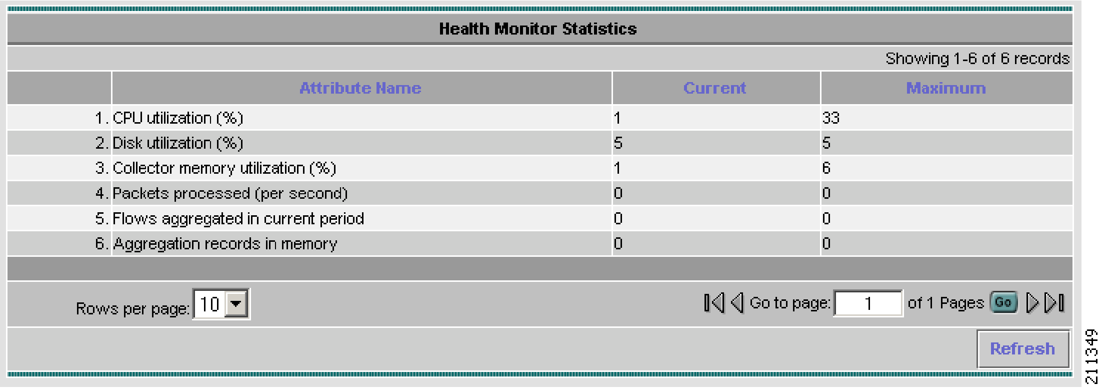
Statistics

The Cisco NetFlow Collector collects port and source statistics. The following sections describe Port Statistics and Source Statistics.

Health Monitor Statistics

Click on the **Health Monitor Statistics** folder of the **Statistics** navigation tree to display health and performance statistics for NetFlow Collector as shown in Figure 2-34.

Figure 2-34 Health Monitor Statistics Window



Health Monitor Statistics

Showing 1-6 of 6 records

	Attribute Name	Current	Maximum
1.	CPU utilization (%)	1	33
2.	Disk utilization (%)	5	5
3.	Collector memory utilization (%)	1	6
4.	Packets processed (per second)	0	0
5.	Flows aggregated in current period	0	0
6.	Aggregation records in memory	0	0

Rows per page: 10

Go to page: 1 of 1 Pages

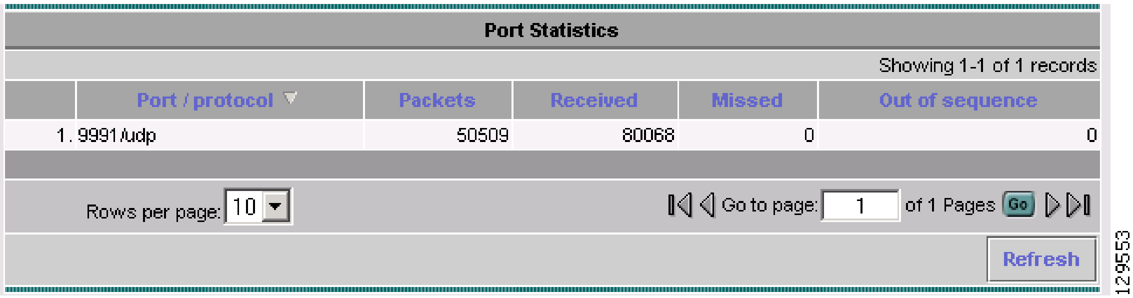
Clicking **Refresh** updates the statistics displayed in the window. Also, the form refreshes automatically every 30 seconds. The table contains the following fields; each statistic contains both the current and maximum value.

Field	Description
CPU Utilization	CPU utilization percentage reported by the operating system.
Disk Utilization	Disk utilization percentage reported by the operating system for **/opt/CSCOnfc/Data**.
Collector Memory Utilization	Memory utilization percentage of the collection process, relative to the limit configured in **/opt/CSCOnfc/config/nfcmem**.
Packets Processes (per second)	Number of NetFlow packets processed per second by the collection process.
Flows Aggregated in Current Period	Number of flows aggregated in the current period; includes duplicate flows.
Aggregation Records in Memory	Number of aggregation records in memory; excludes duplicate flows.

Port Statistics

Click on the **Port Statistics** folder of the Statistics navigation tree to display statistics for the ports on which the Cisco NetFlow Collector has received data. See Figure 2-35.

Figure 2-35 Port Statistics Window



Port Statistics

Showing 1-1 of 1 records

	Port / protocol	Packets	Received	Missed	Out of sequence
1.	9991/udp	50509	80068	0	0

Rows per page: 10

Go to page: 1 of 1 Pages

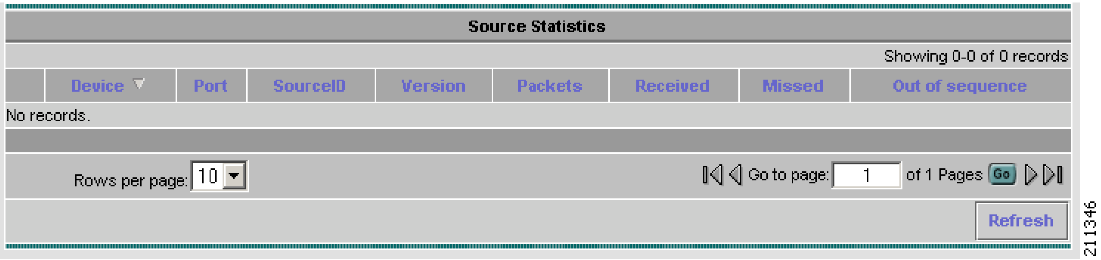
Clicking on **Refresh** updates the statistics shown. The table contains the following fields.

Field	Description
Port/Protocol	Port and protocol for these statistics. For example, 10001/udp.
Packets	Number of packets received.
Received	Number of flows received.
Missed	Number of flows missed (estimate based on sequence number).
Out of sequence	Number of out-of-sequence flows (estimate based on sequence number).

Source Statistics

Click on the **Source Statistics** folder of the Statistics navigation tree to display statistics for the source devices that Cisco NetFlow Collector has received data from. Source Statistics. See Figure 2-36.

Figure 2-36 Source Statistics Window



Source Statistics

Showing 0-0 of 0 records

	Device	Port	SourceID	Version	Packets	Received	Missed	Out of sequence

No records.

Rows per page: 10

Go to page: 1 of 1 Pages

Clicking on **Refresh** updates the statistics shown. The table contains the following fields.

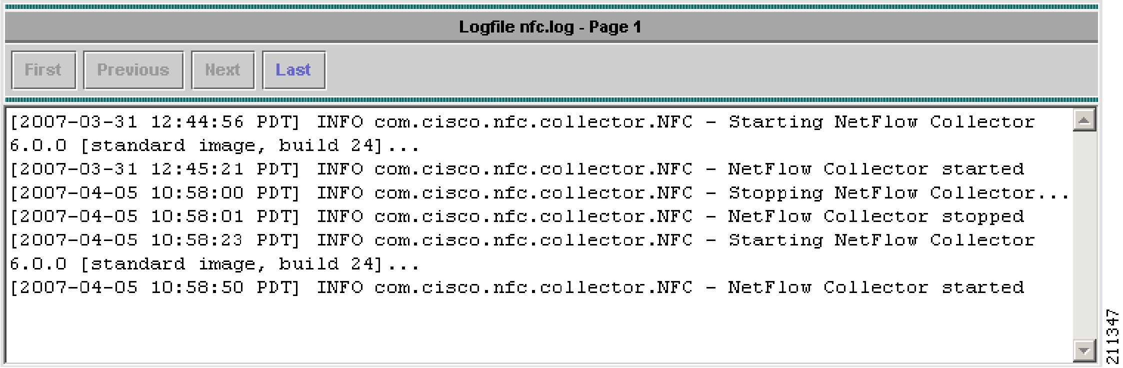
Field	Description
Device	IP address from where the data was received.
Port	Port and protocol
SourceID	**source_id** (V9) or **engine_type** and **engine_id** (other versions).
Version	Version of data received.
Packets	Number of packets received.
Received	Number of flows received.
Missed	Number of flows missed (estimate based on sequence number).
Out of sequence	Number of out-of-sequence flows (estimate based on sequence number).

Each row shown represents a unique combination of the Device, Port, SourceID, and NDE version.

Logs

The logs viewable from the web-based UI are listed under the Logs folder in the navigation tree. Clicking on a specific log loads that log file into the browser window, as shown in Figure 2-37.

Figure 2-37 Viewing Logs in Web-based UI



```
[2007-03-31 12:44:56 PDT] INFO com.cisco.nfc.collector.NFC - Starting NetFlow Collector
6.0.0 [standard image, build 24]...
[2007-03-31 12:45:21 PDT] INFO com.cisco.nfc.collector.NFC - NetFlow Collector started
[2007-04-05 10:58:00 PDT] INFO com.cisco.nfc.collector.NFC - Stopping NetFlow Collector...
[2007-04-05 10:58:01 PDT] INFO com.cisco.nfc.collector.NFC - NetFlow Collector stopped
[2007-04-05 10:58:23 PDT] INFO com.cisco.nfc.collector.NFC - Starting NetFlow Collector
6.0.0 [standard image, build 24]...
[2007-04-05 10:58:50 PDT] INFO com.cisco.nfc.collector.NFC - NetFlow Collector started
```